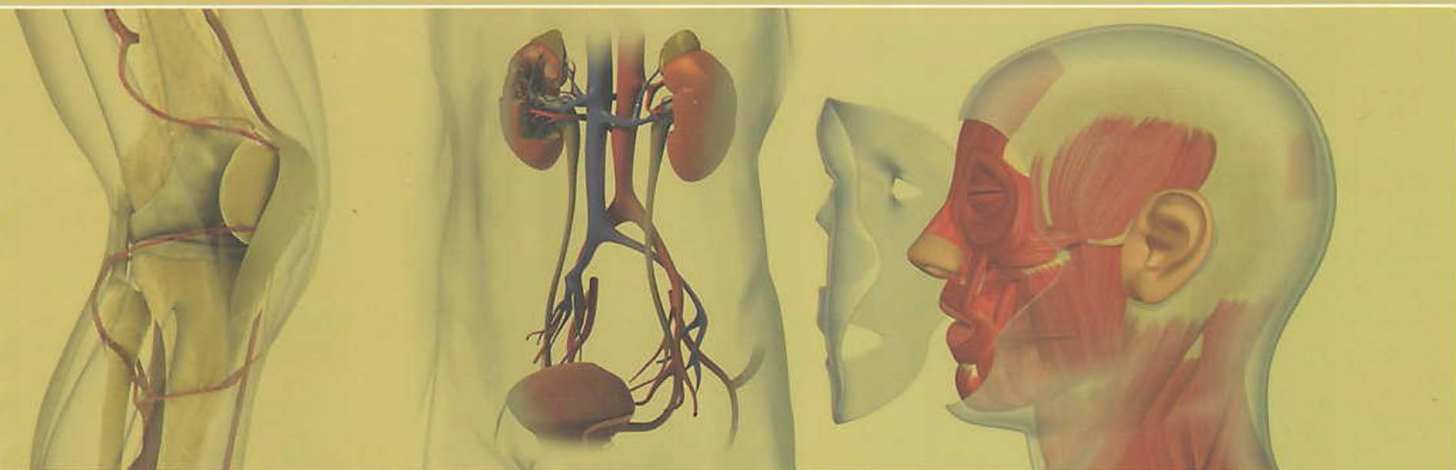


Matary Atlas of **SURGICAL SPECIALTIES**

Mohammed El-Matary



**ORTHOPEDIC SURGERY
NEUROSURGERY
UROSURGERY
CARDIOTHORACIC SURGERY**

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Preface

This book provides an update for medical students who need to keep abreast of recent developments. I hope also it will be useful for those preparing for postgraduate examination.

This book is designed to provide a concise summary of Special surgery, in form of slides, text, specimens & radiographs.

The author is extremely grateful to all the contributors for the high standard of the new chapters, and hopes that you, the reader, will enjoy going through these pages as much as he had.

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Preface

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M. El-Matary

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Cairo University

Dr. Mahmoud Fathy

Cairo University

Dr. Kareem Mohamed

Ain shams university

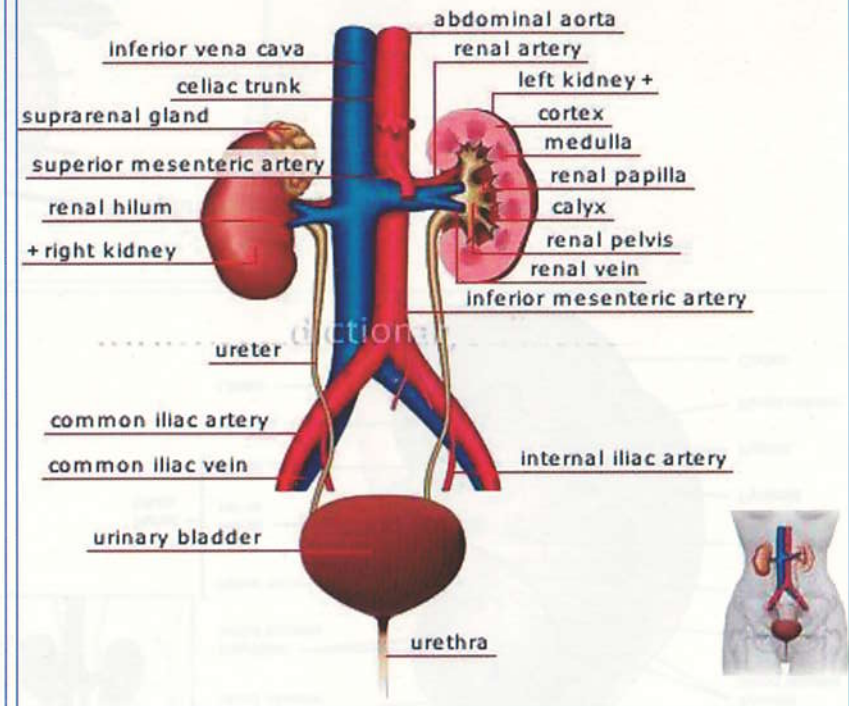
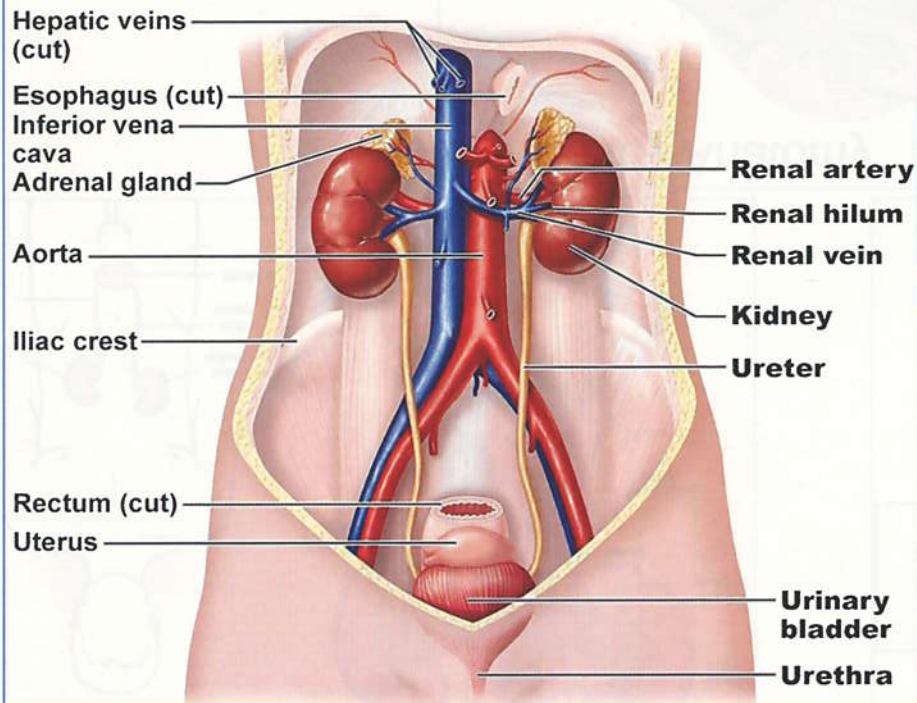
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2. Orthopaedic Surgery	81
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4. Cardiothoracic Surgery	160

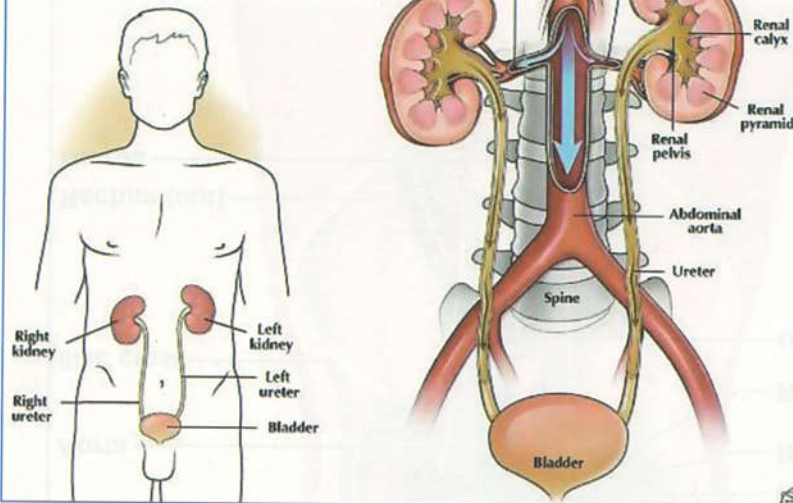
Urosurgery

Anatomy

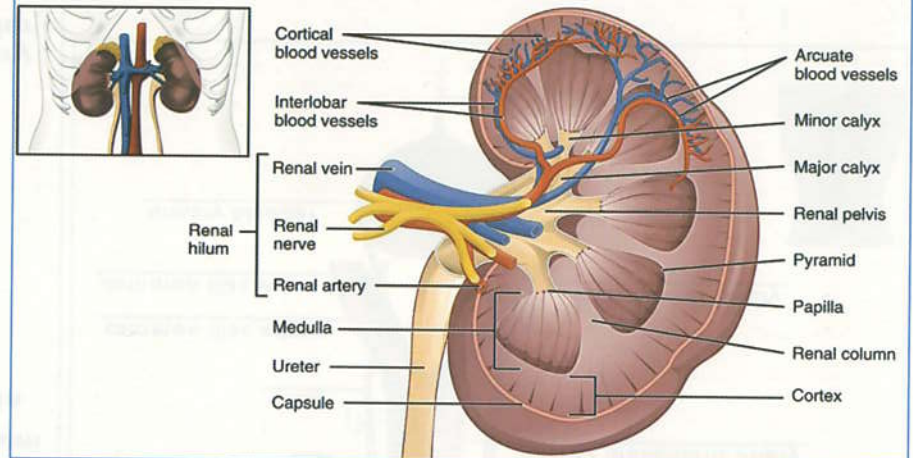
Urinary System



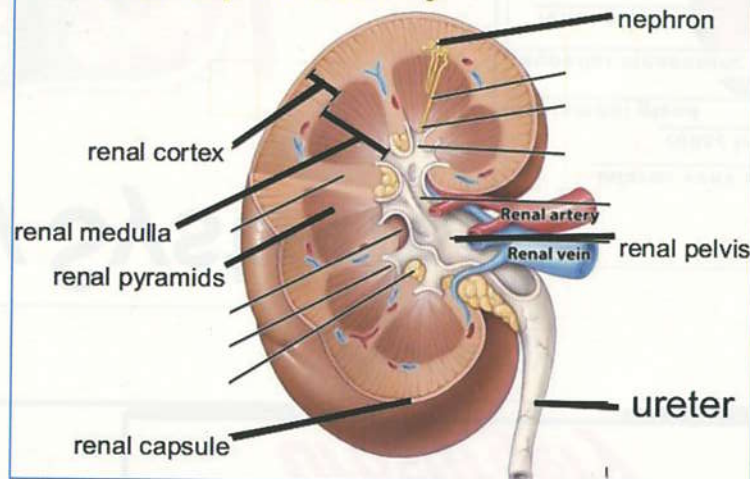
URINARY SYSTEM ANATOMY

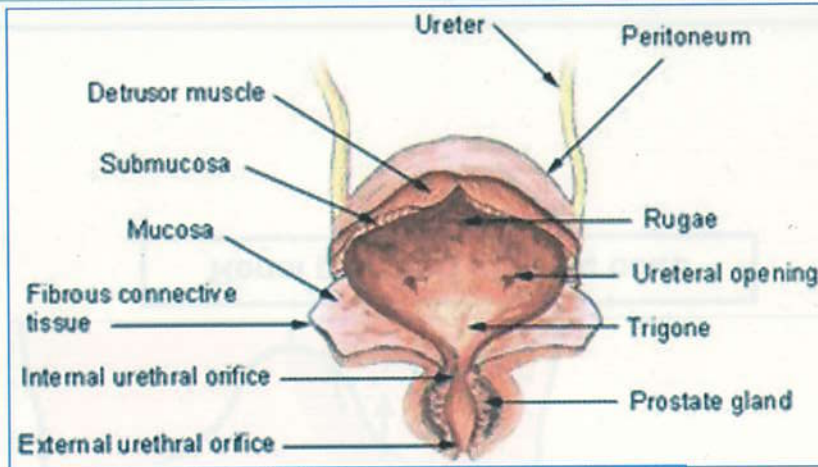


Kidney Anatomy

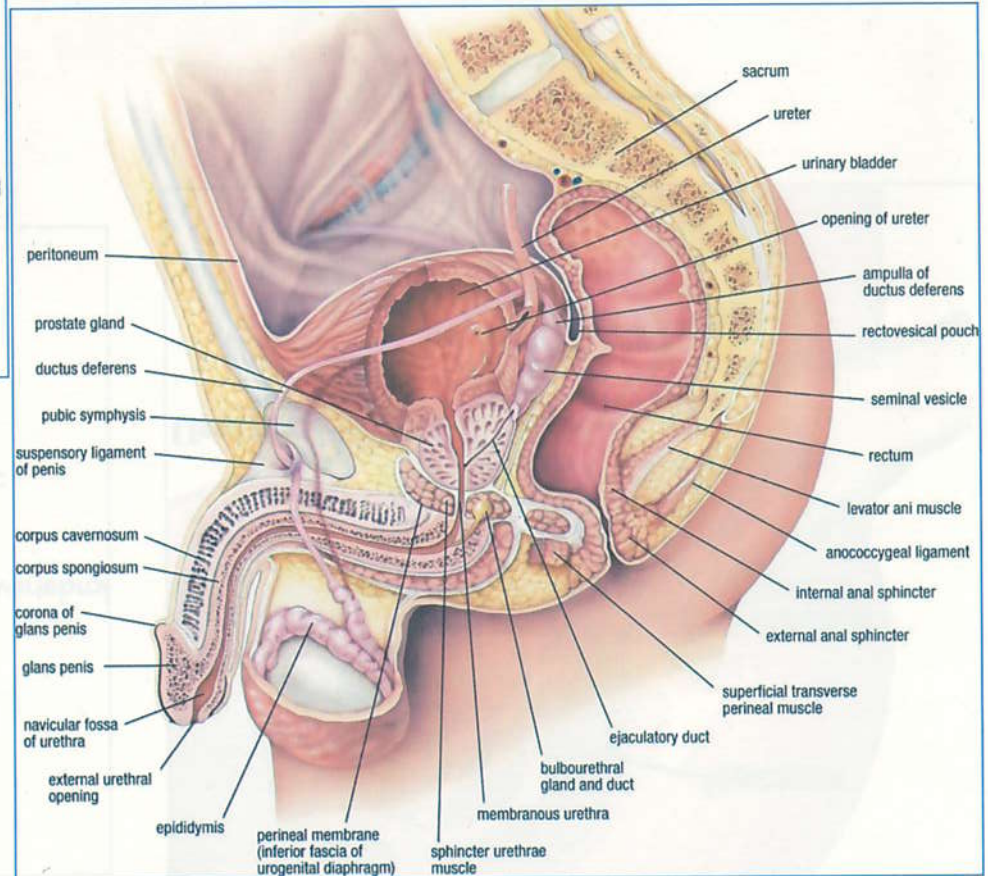
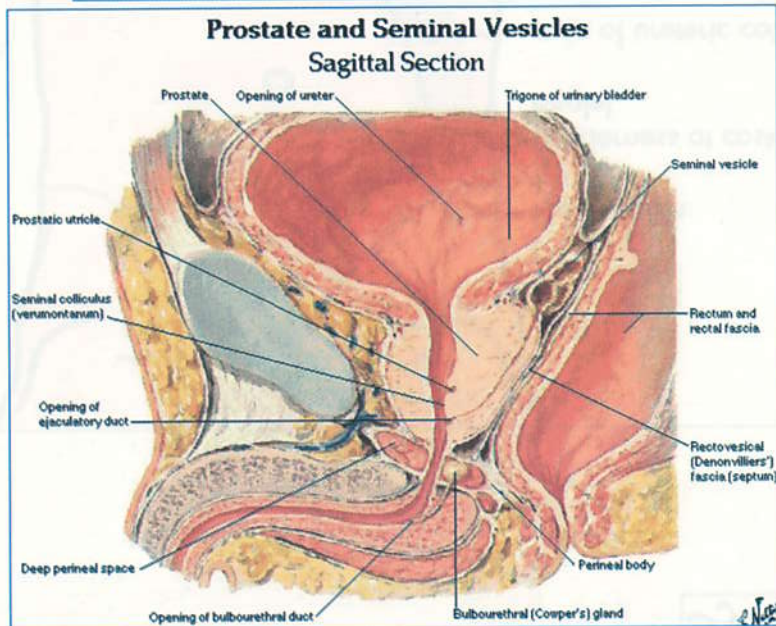


Kidney Anatomy



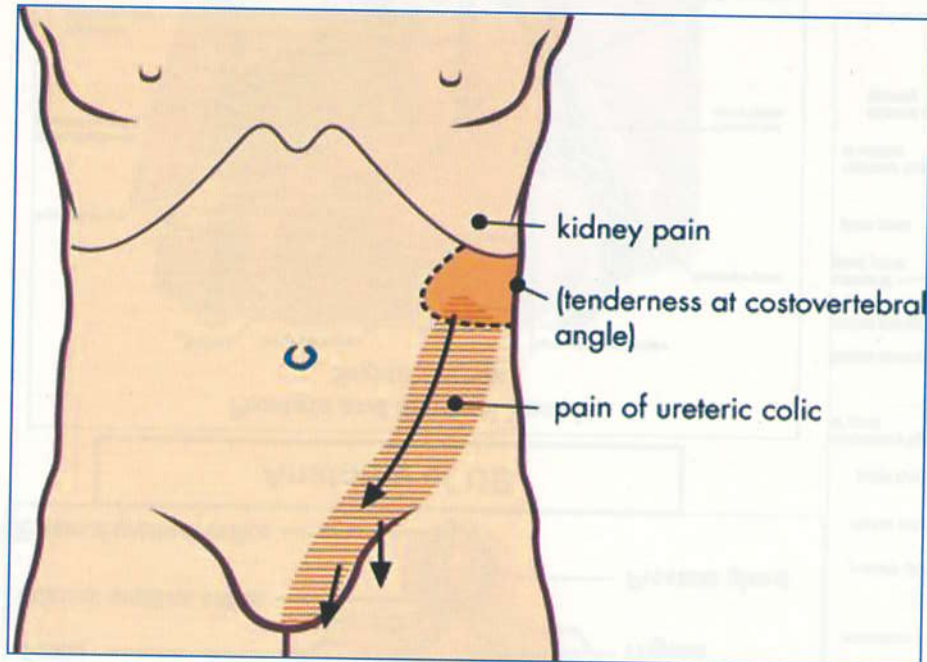


Anatomy of UB

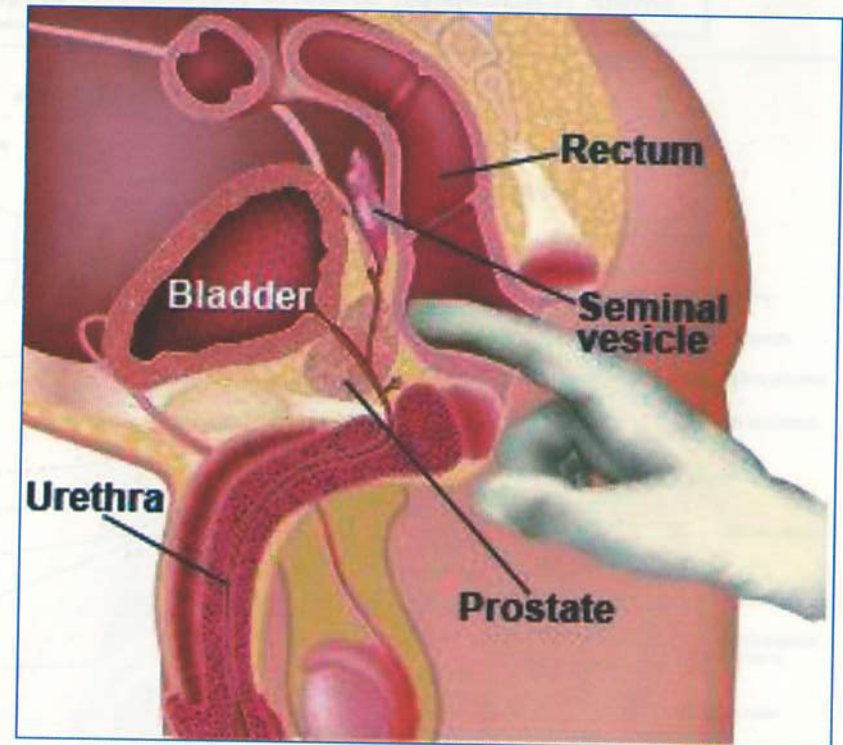


Male urogenital system (Midsagittal view)

Symptomatology



Renal pain and ureteric colic



DRE

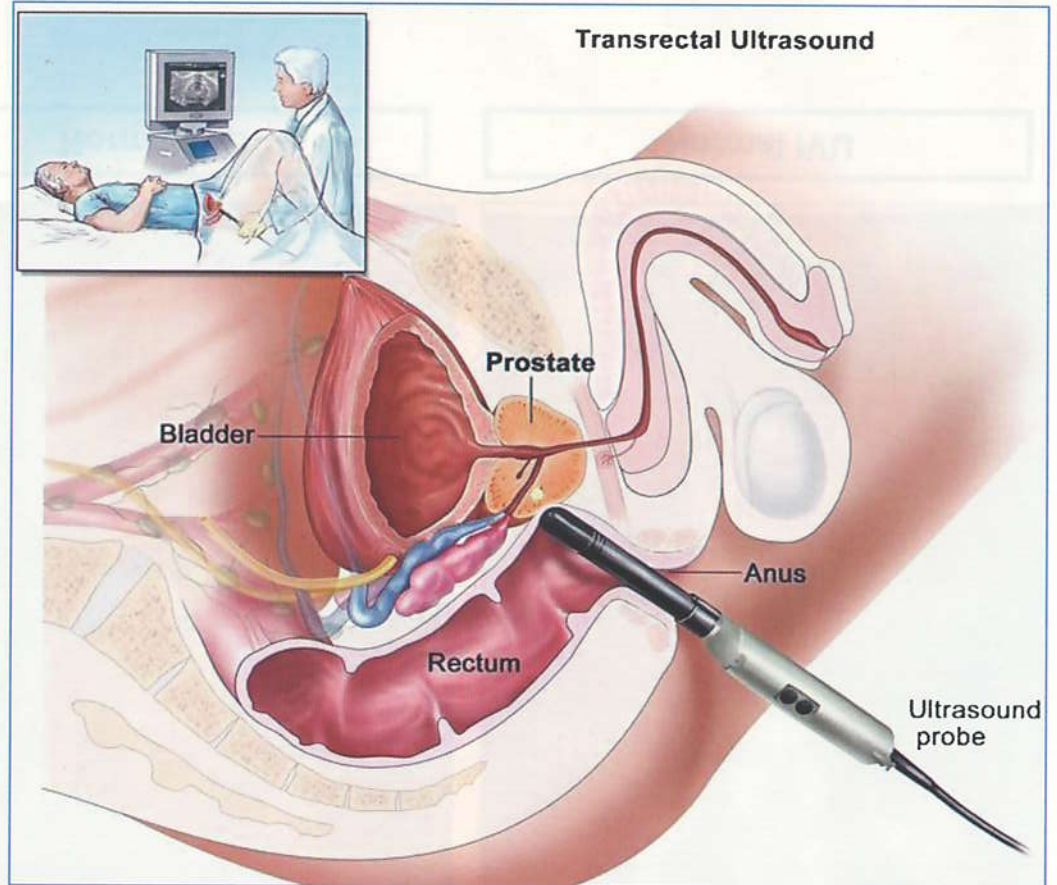
Investigations of urinary tract disease



Normal adult sonar



Renal adult sonar





Plain x ray of urinary tract



Normal IVU

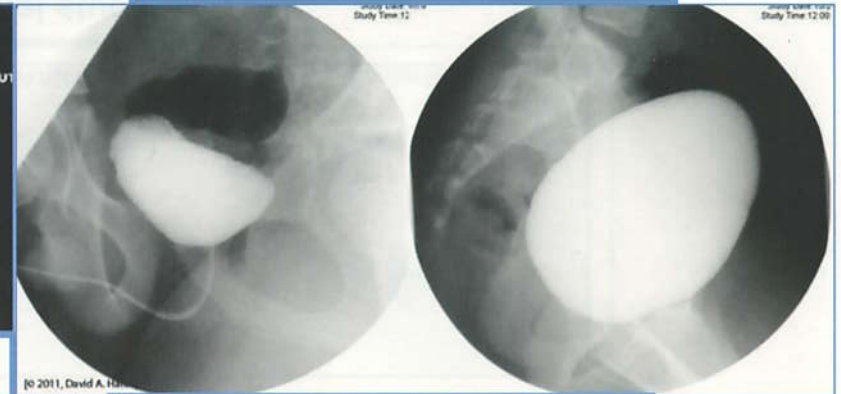


Normal IVU

Normal filling phase



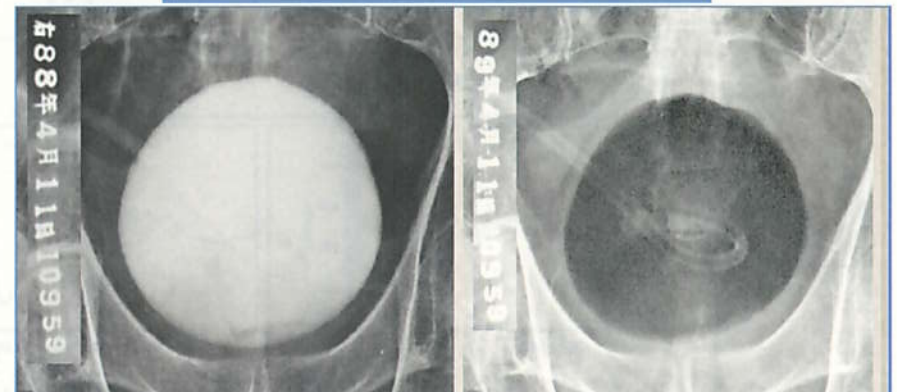
Scout film: Normal



Normal cystography



Normal IVU

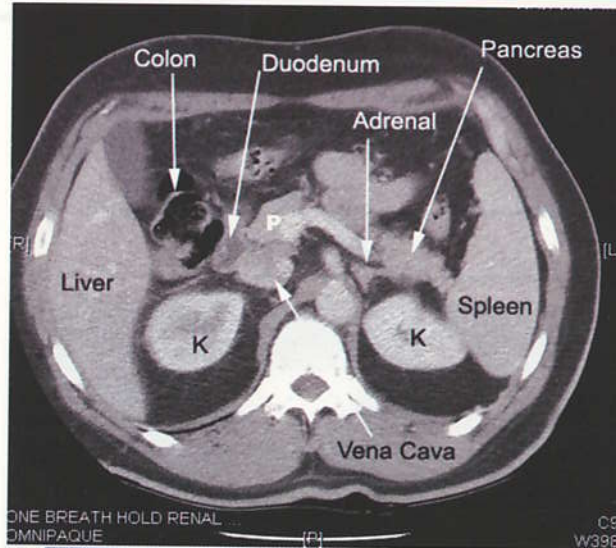


Normal Cystography

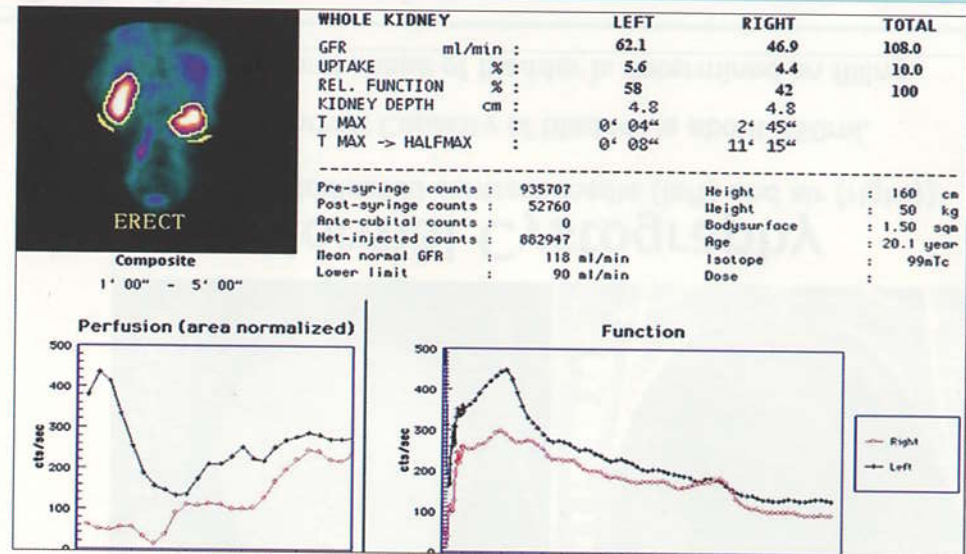
(fill with Iodinated contrast media (left) and air (right))

The normal Capacity of bladder is about 250ml.

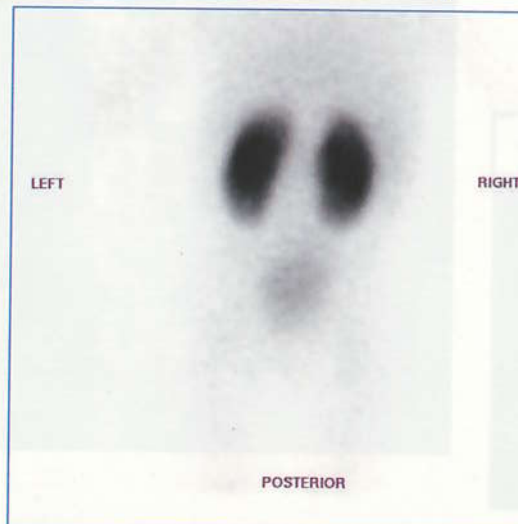
The size and shape of bladder is determined on filling.



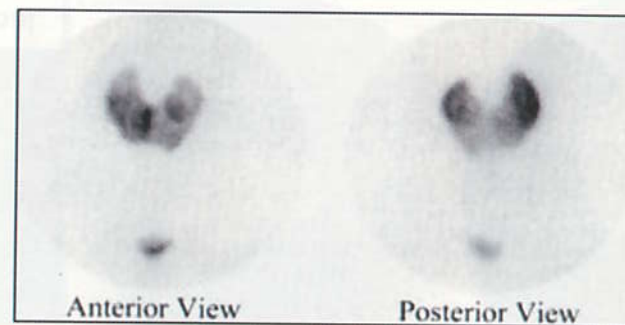
CT of kidneys



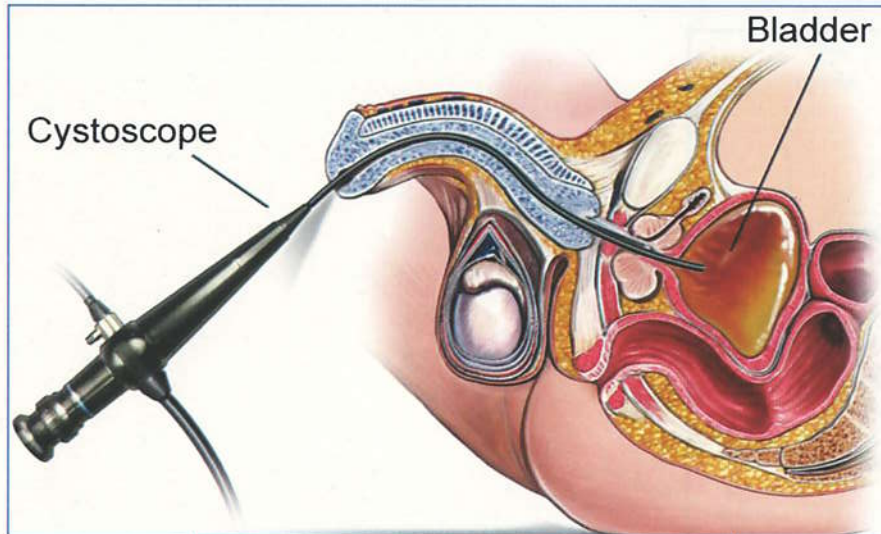
DTPA scan



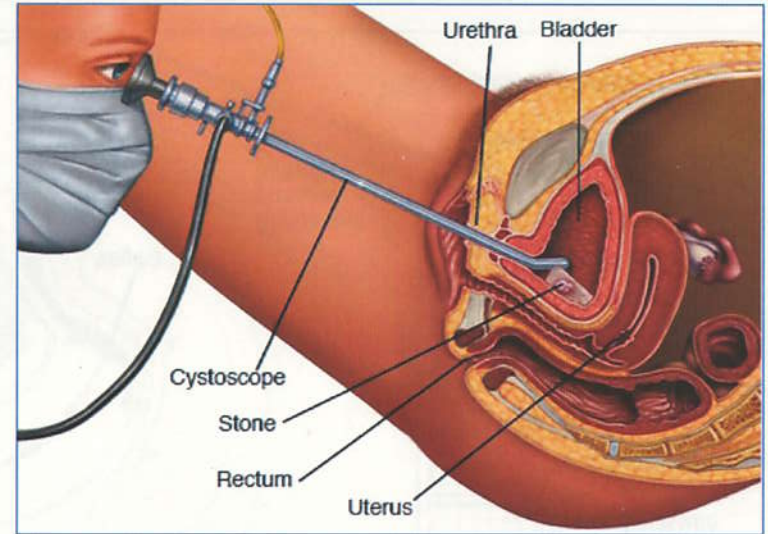
- Horse-shoe kidney



DMSA renal study

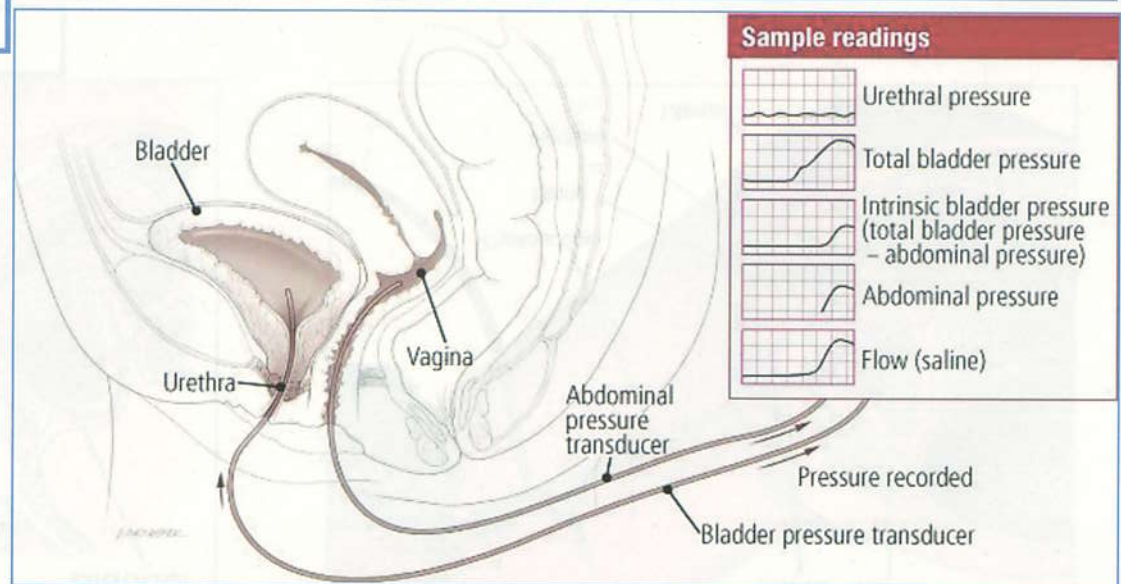
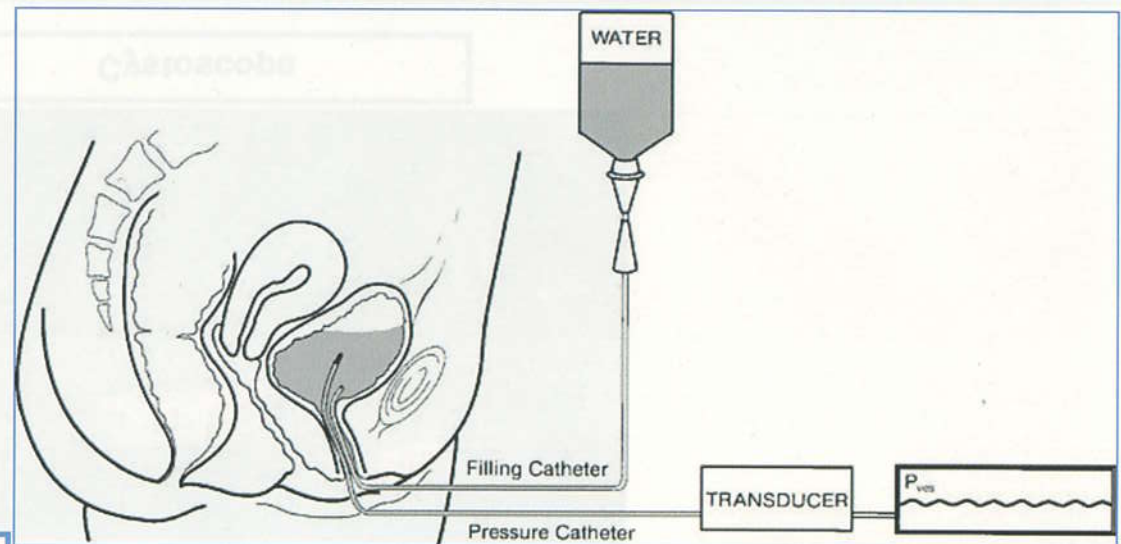


Flexible cystoscopy



Cystoscope

Cystometry



Congenital anomalies



Simple renal cyst



Renal cyst



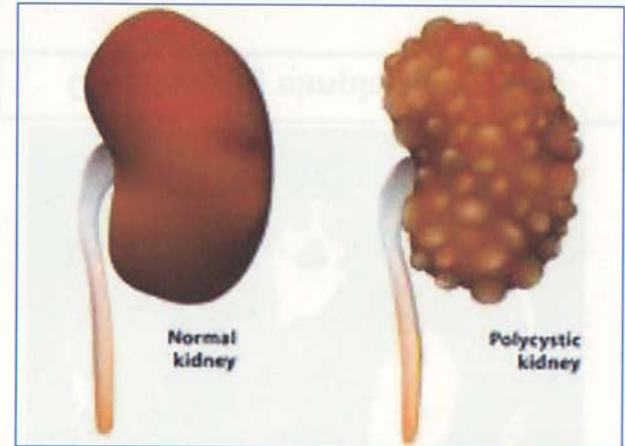
Sonar showing simple renal cyst



CT showing simple renal cyst



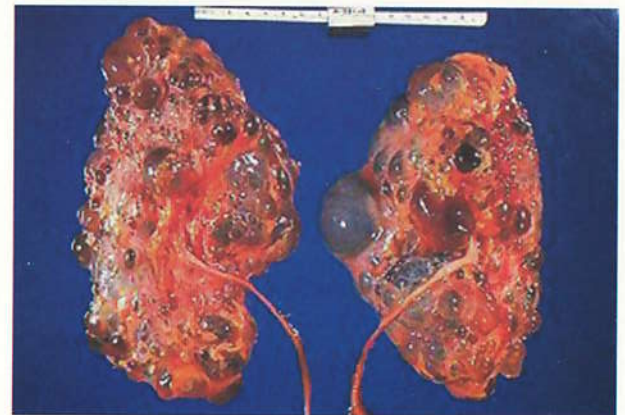
Sonogram shows cysts with bilaterally enlarged kidneys. These findings are compatible with a diagnosis of autosomal dominant polycystic kidney disease (ADPKD)



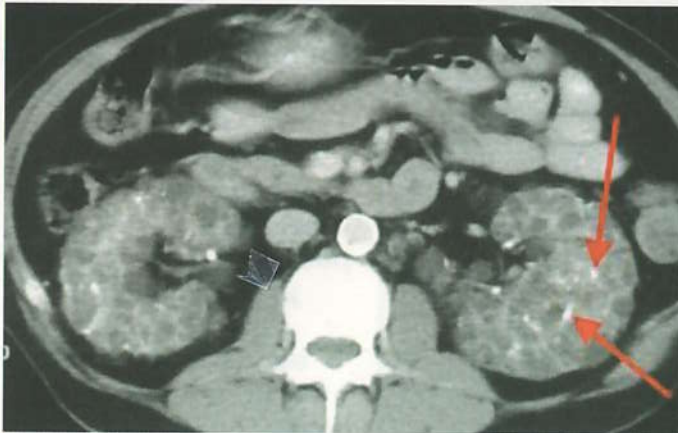
Polycystic kidney disease



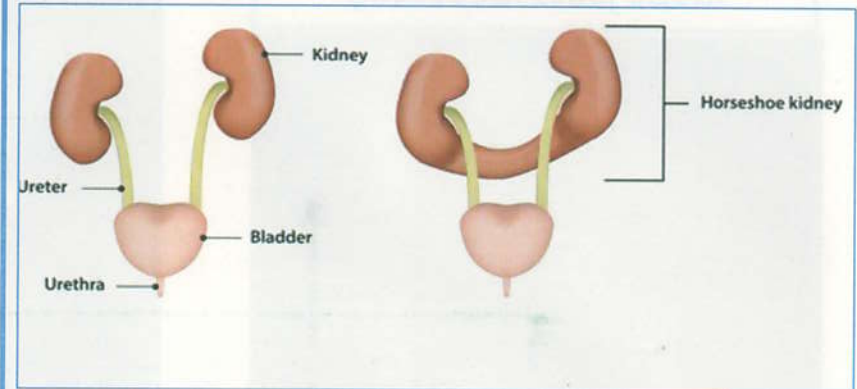
Gray scale U/S image of kidney in the sagittal (longitudinal plane) shows very little normal renal parenchyma (arrows) with the enlarged kidney replaced by innumerable simple cysts (C). Hydronephrosis would be a consideration except that these lesions do not connect to the collecting systems hydronephrosis would (e.g., calyces to infundibuli to renal pelvis)



Polycystic kidneys



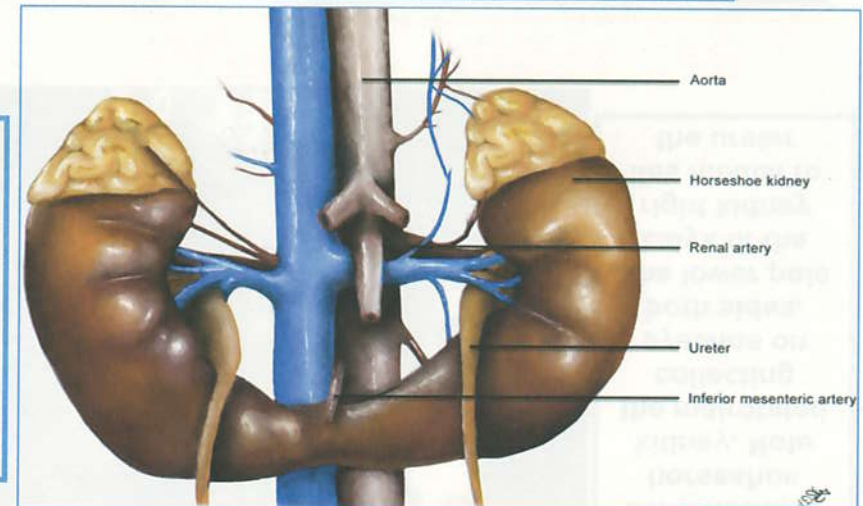
Contrast enhanced CT in a patient with ADPKD shows bilateral slightly enlarged kidneys which are nearly totally replaced by small renal cystic lesions, many of which contain calcifications in the cyst walls (arrows)



Horseshoe kidney



Excretory urogram shows minimal bilateral tubular changes caused by a mild form of autosomal recessive polycystic kidney disease

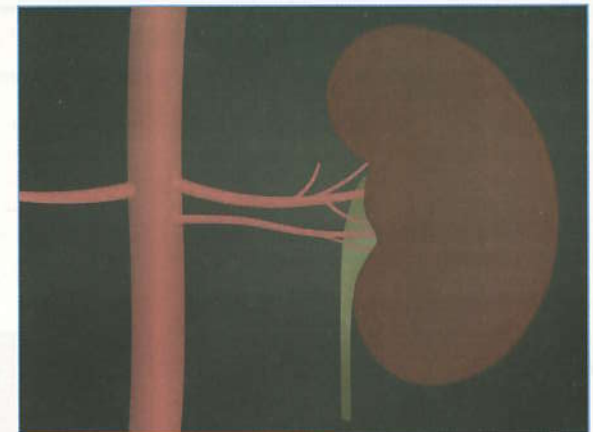
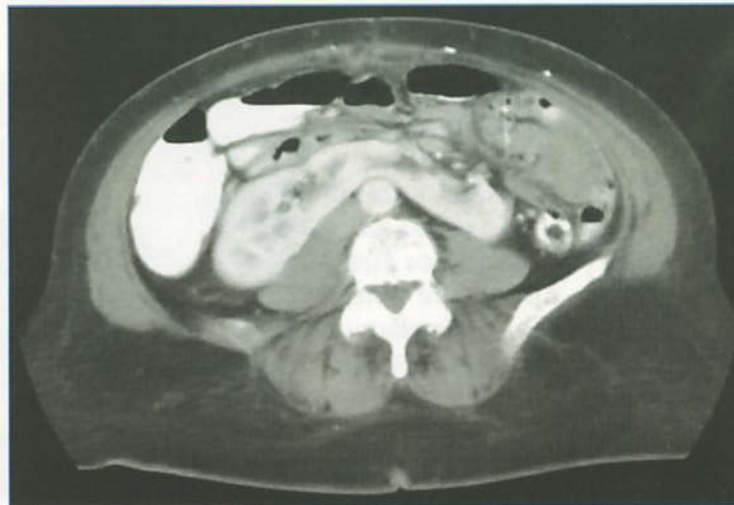


Plain radiograph of the abdomen shows calcific opacities in the region of left lower renal pole. Note the reversed axis of the kidneys, which suggests horseshoe kidney.

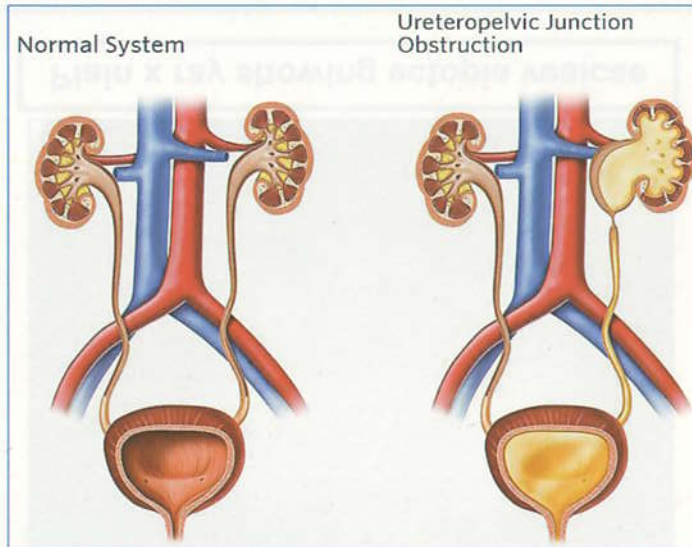


Intravenous urogram (IVU) demonstrates horseshoe kidney. Note the malrotated collecting systems on both sides. The lower pole calyx of the right kidney lies medial to the ureter.

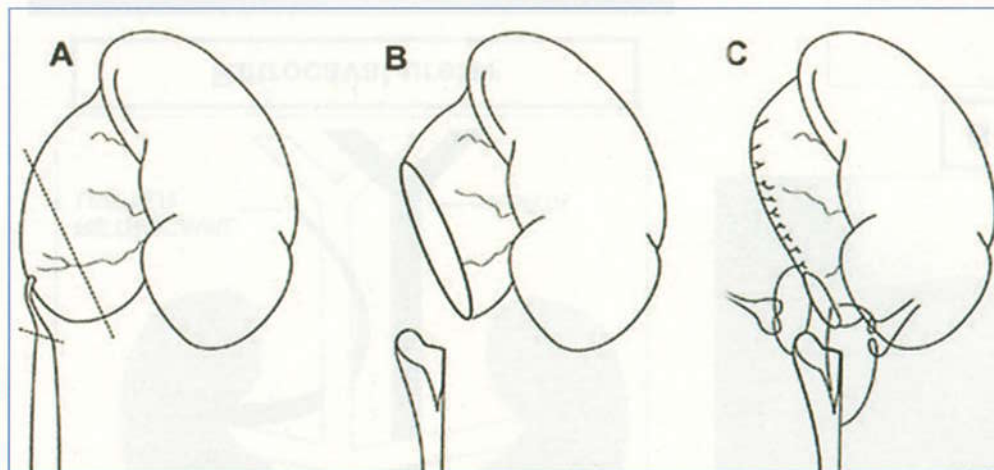
Axial computed tomography (CT) scan obtained through the abdomen after the intravenous administration of contrast material. Fused kidneys are revealed, with a parenchymal isthmus at the lower poles. Note the malrotated collecting system of the left kidney, facing anterolaterally.



Accessory renal artery



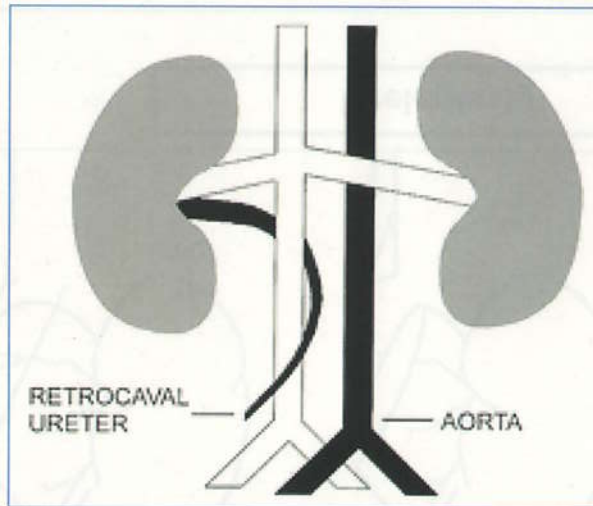
MRI showing bilateral Pelvi ureteric junction obstruction with normal ureters and bladder



Pyeloplasty



IVP showing right pelvi-ureteric junction obstruction



Retrocaval ureter



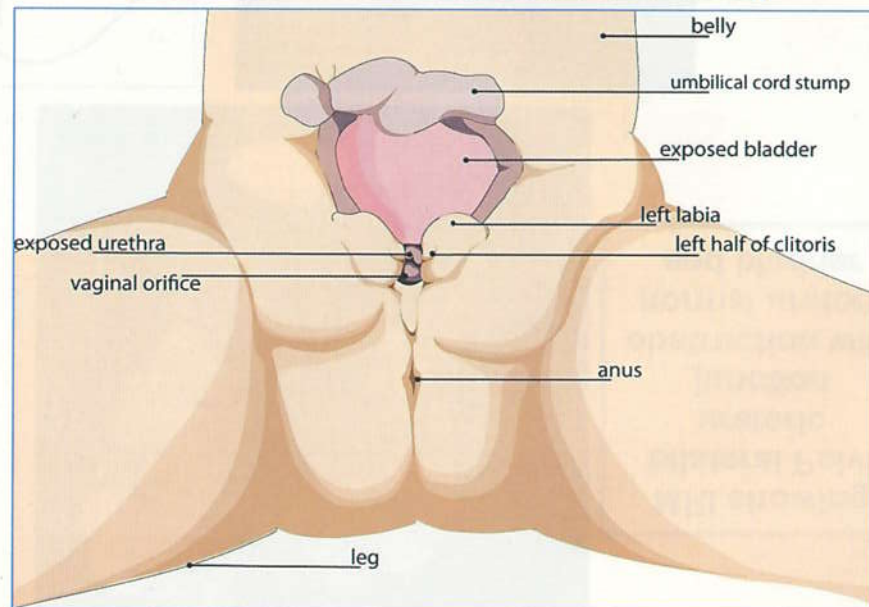
Plain x ray showing ectopia vesicae

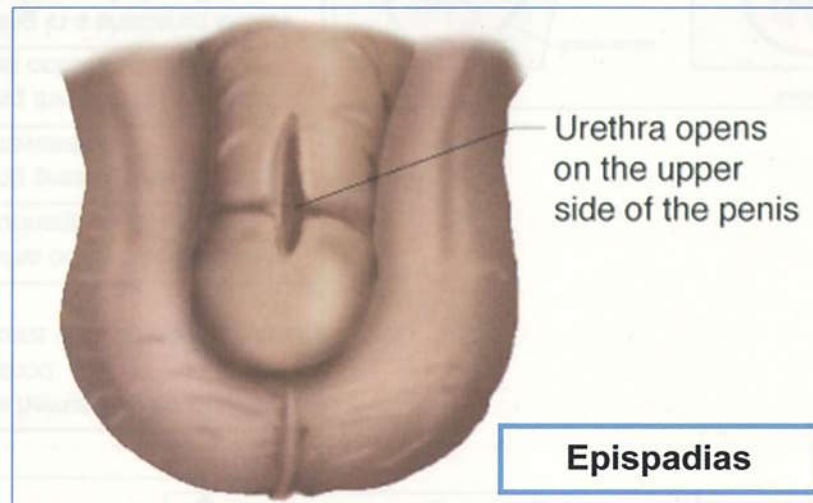
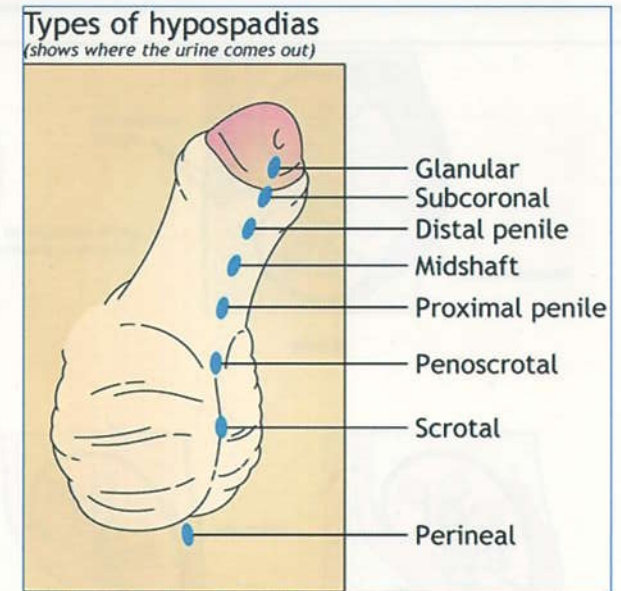
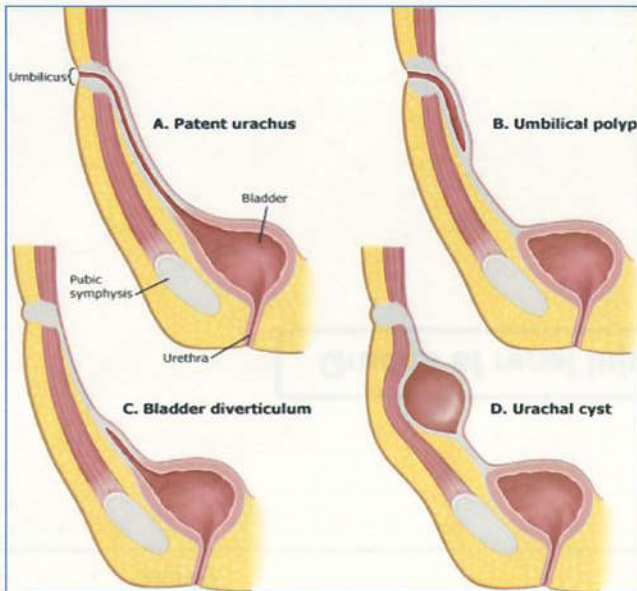


Abdominal wall muscle
Umbilical cord
Open bladder
Pubic bones
Open penis
Anus



Bladder extrophy (Ectopia vesicae)

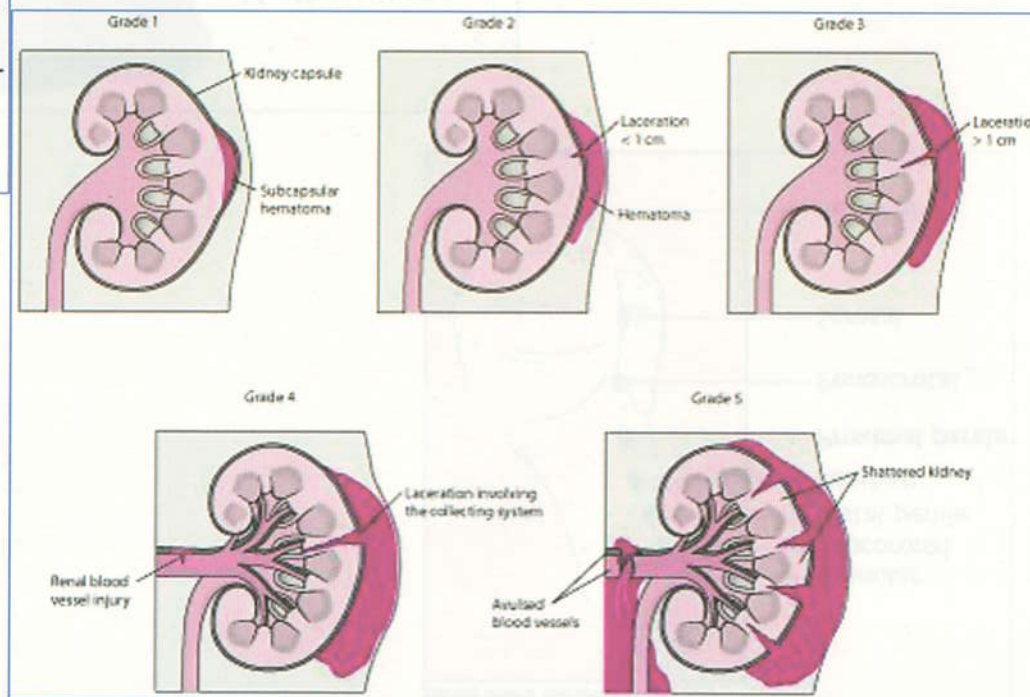




Injuries of urinary tract

Grade	Extent of renal injury
1	Contusion: microscopic or gross hematuria, no depiction of injury with any imaging method Hematoma: subcapsular hematoma with no parenchymal laceration
2	Nonexpanding perirenal hematoma or cortical laceration less than 1 cm deep with no urinary extravasation
3	Parenchymal laceration extending greater than 1 cm into the cortex with no urinary extravasation
4	Parenchymal laceration extending through the cortico-medullary junction and into the collecting system
5	Multiple major lacerations resulting in a shattered kidney or avulsion of renal hilum that devascularizes the kidney

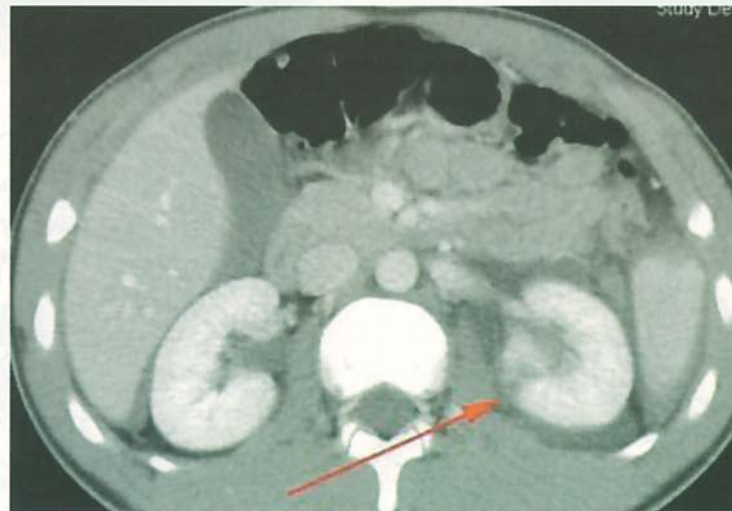
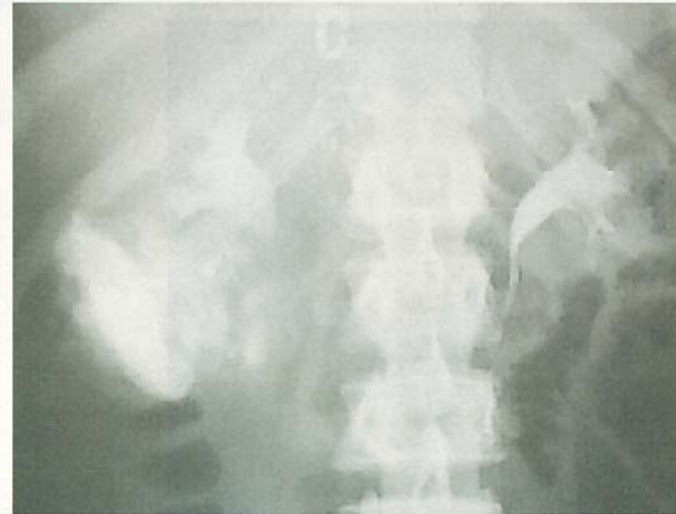
Grades of renal injuries



Transverse image shows a hypoechoic lesion (arrowhead) with internal echoes



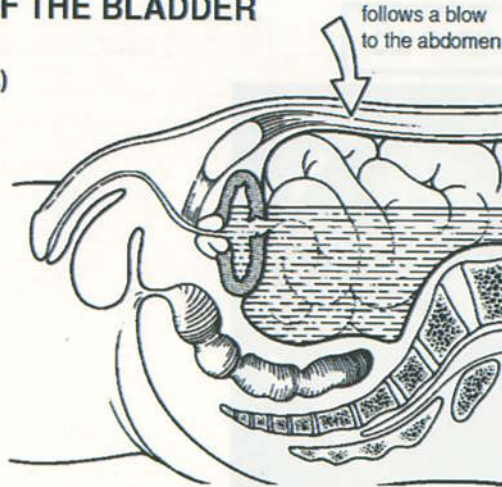
IVU of kidney injury, Extravasation of contrast from right kidney



CT scan showing renal trauma

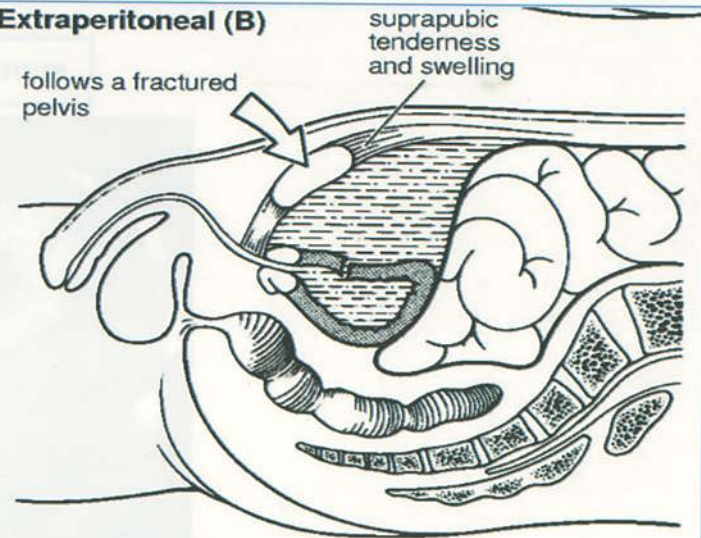
RUPTURE OF THE BLADDER

Intraperitoneal (A)



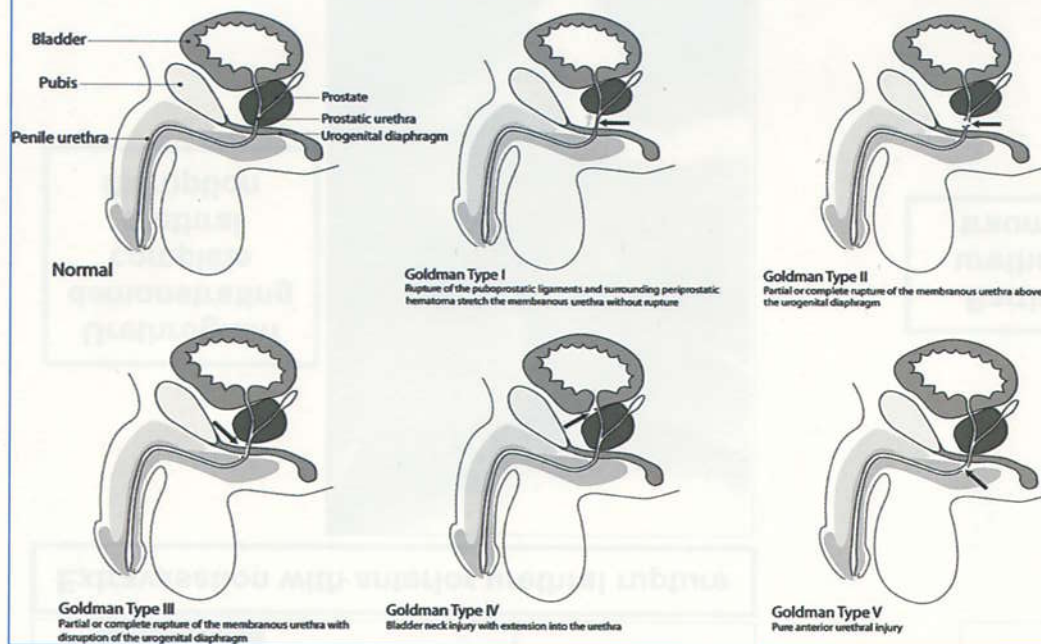
Cystogram of intraperitoneal bladder rupture

Extraperitoneal (B)



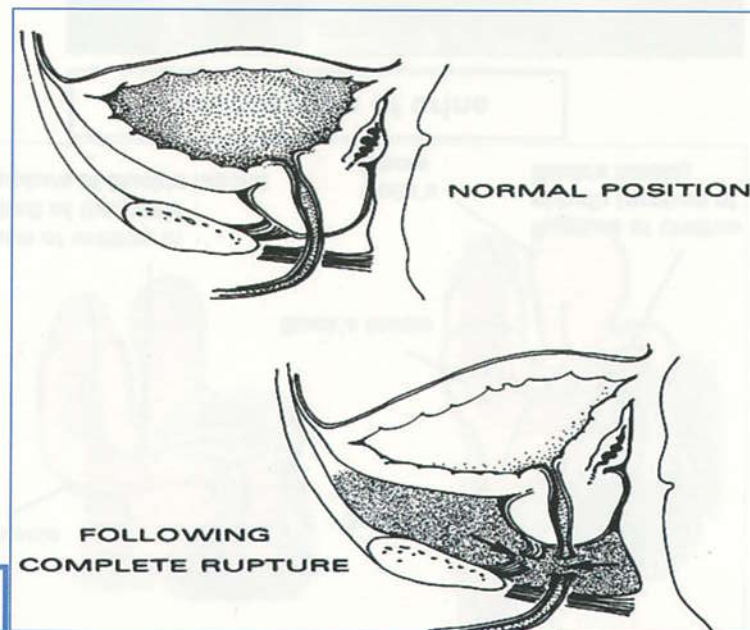
Conventional cystogram demonstrating an intraperitoneal bladder rupture

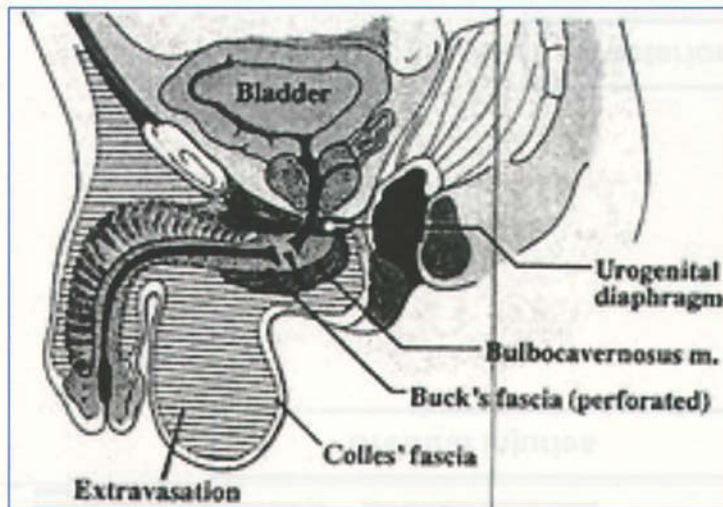
Goldman Classification of Urethral Injury



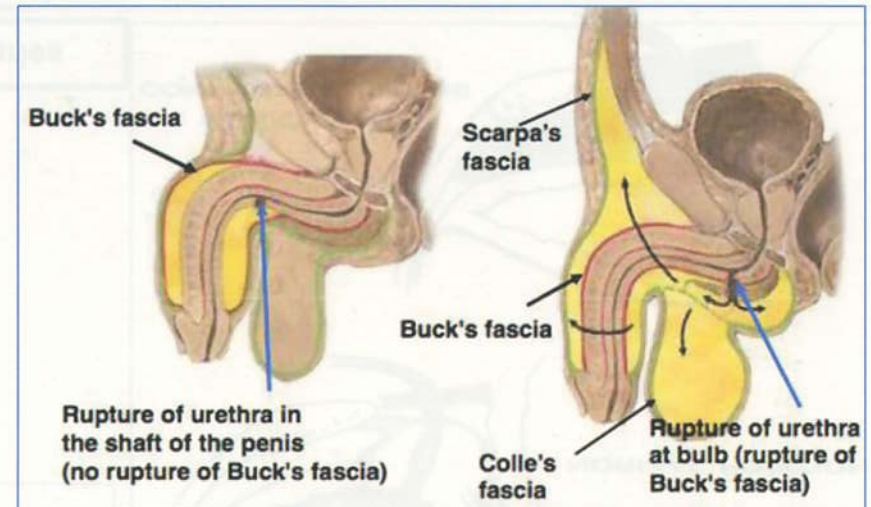
Urethral injuries

Posterior urethral injuries





Extravasation with anterior urethral rupture



Extravasation of urine

Urethrogram demonstrating complete urethral disruption



Partial urethral trauma





Partial rupture



Complete rupture

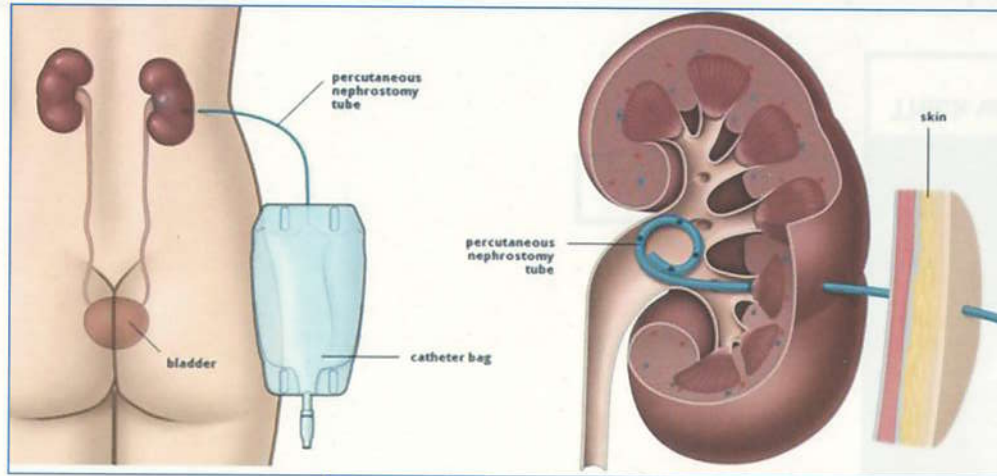
Urethral injury

Bullet nosed dilatation of posterior urethra

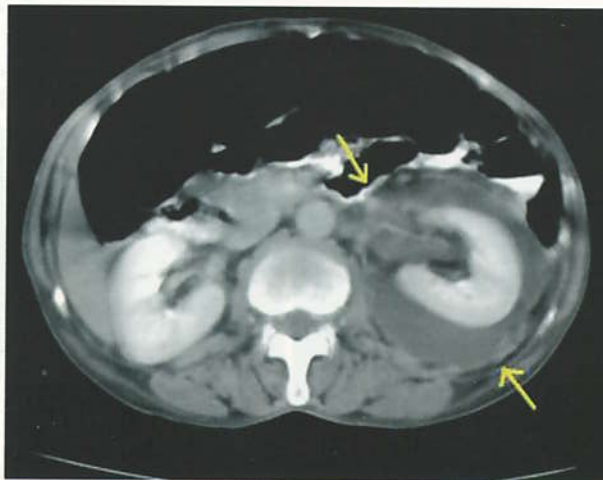


UTI

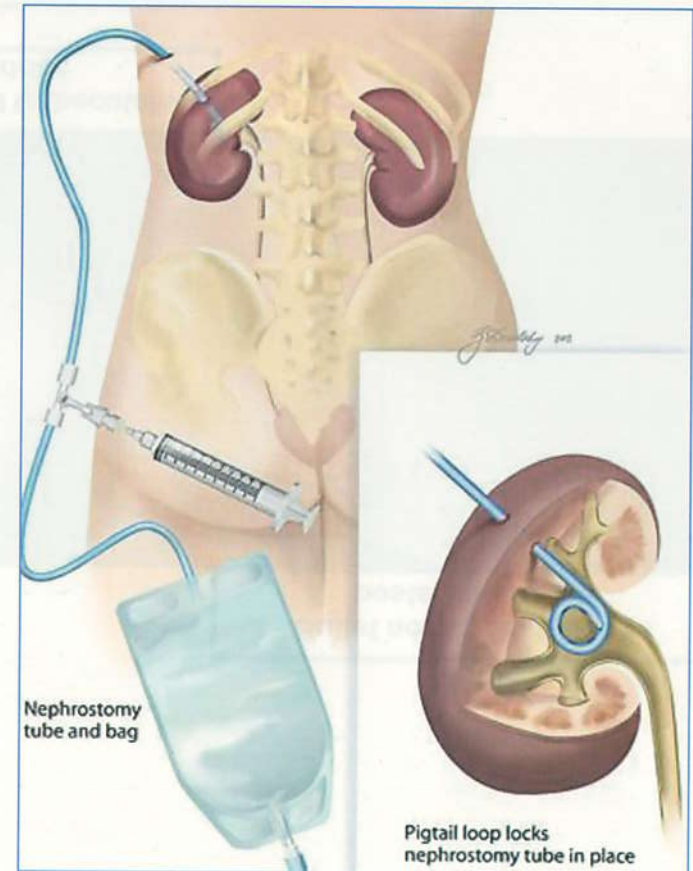
Thick walled trabeculated bladder



Nephrostomy

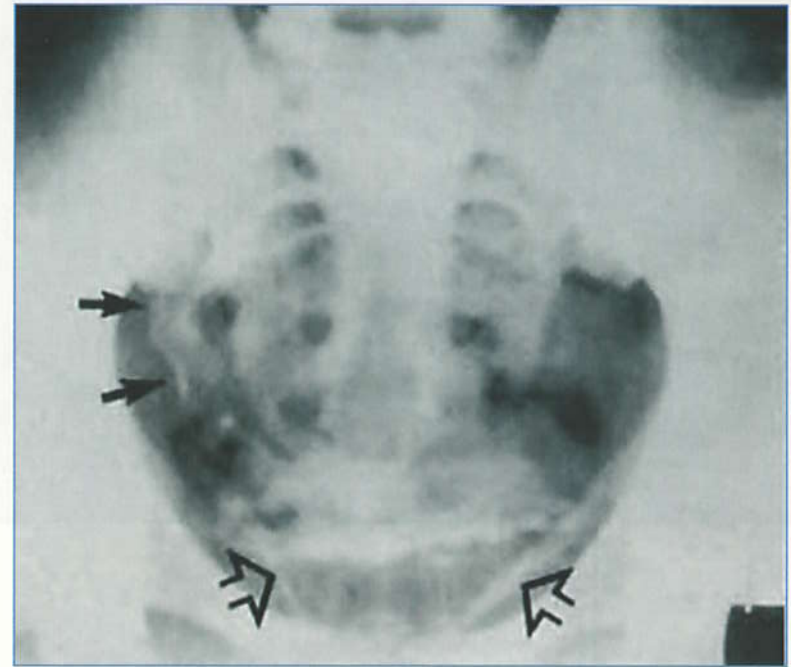


CT showing perinephric abscess





**Genitourinary suppurative infections:
perinephric & renal abscesses**



**Plain film of the pelvis shows bladder wall
calcifications (open arrows) in patient with
schistosomiasis infection**

Obstructive uropathy

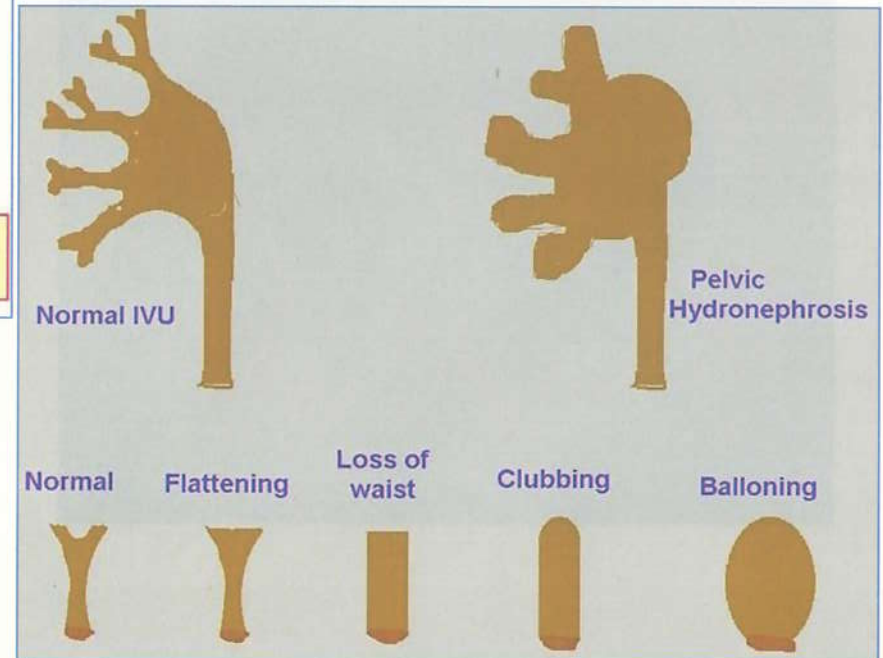
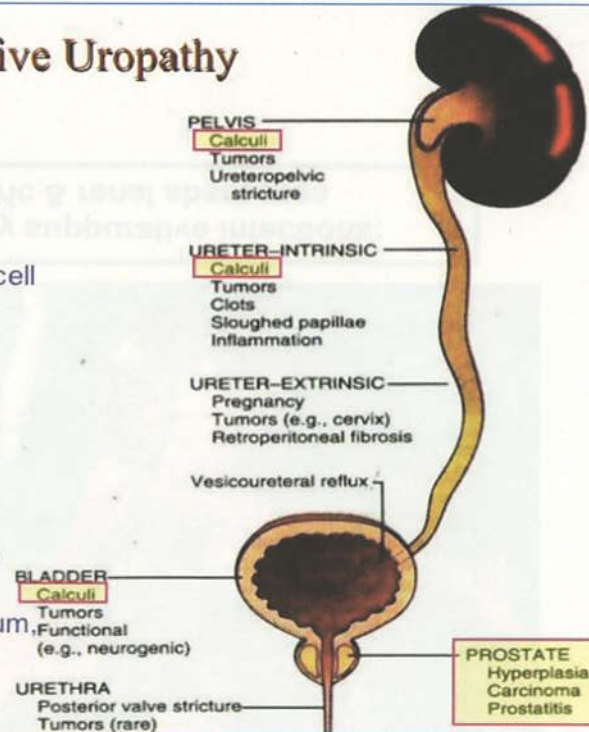
Causes of Obstructive Uropathy

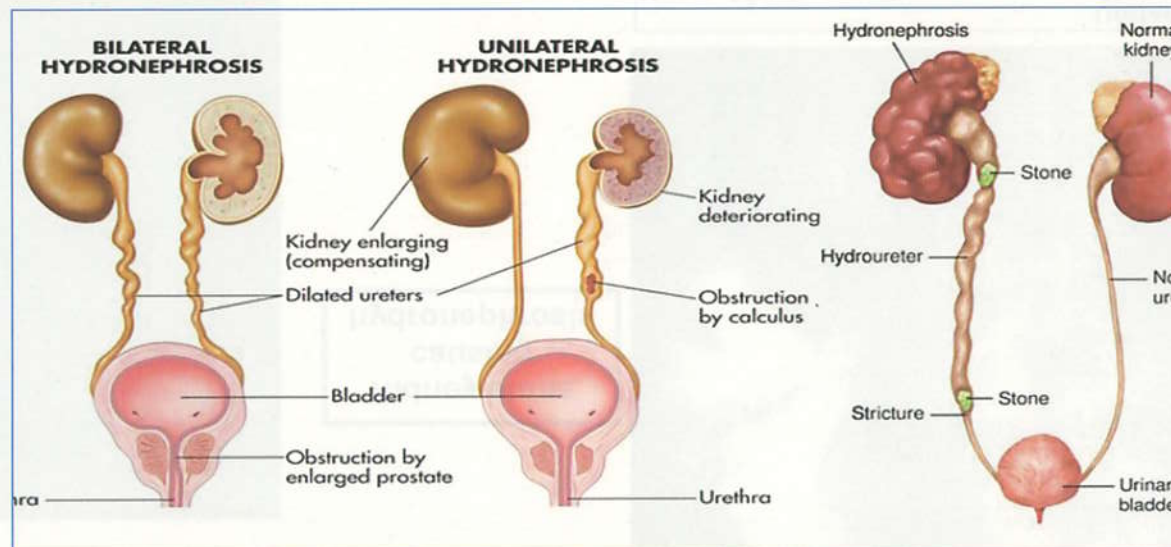
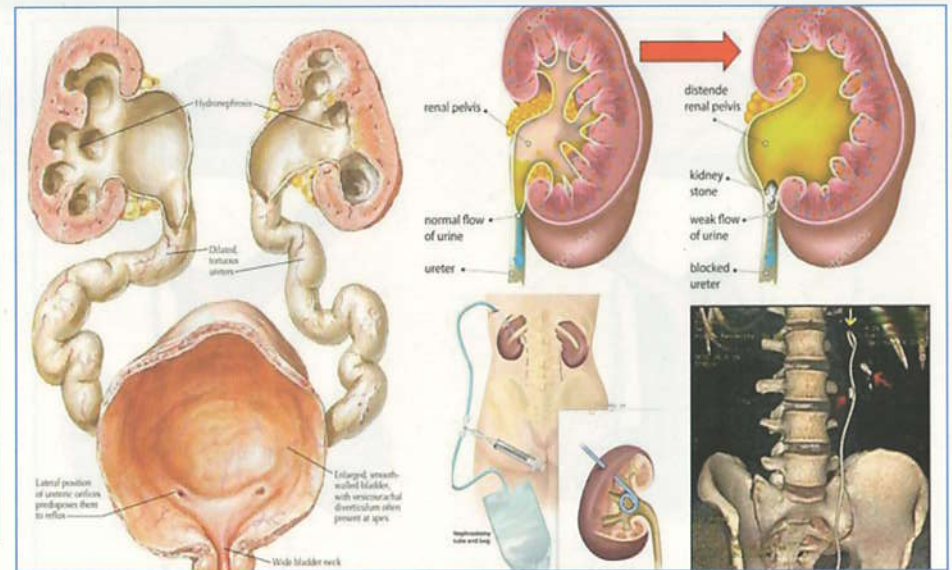
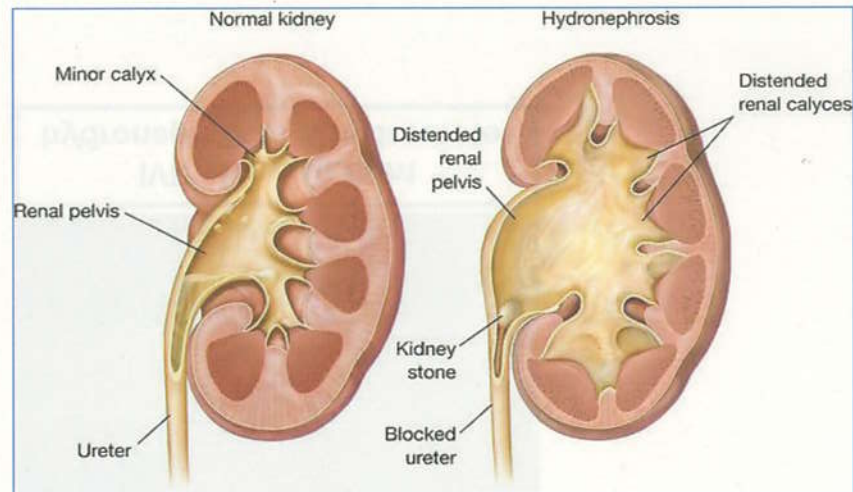
• INTRINSIC:

- **Calculi - Lithiasis**
- Strictures – congenital, inflammatory
- Tumors – Transitional cell Ca.
- Blood clots – UTI, Glomerulonephritis

• EXTRINSIC:

- Pregnancy
- Inflammation- PID, peritonitis, diverticulitis, salpingitis.
- Tumors: **Prostate**, rectum, bladder, ovaries etc.





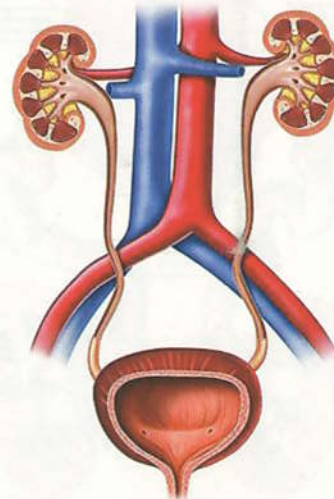


IVU showing right hydronephrosis & hydroureter

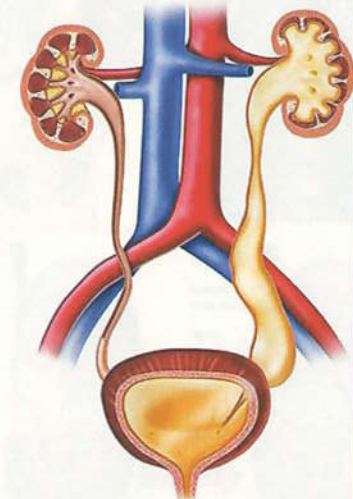
Kidney stone causing hydronephrosis

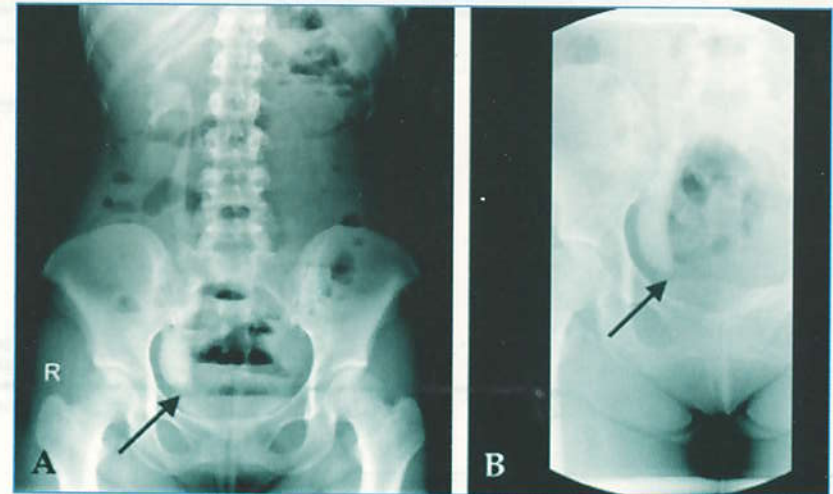
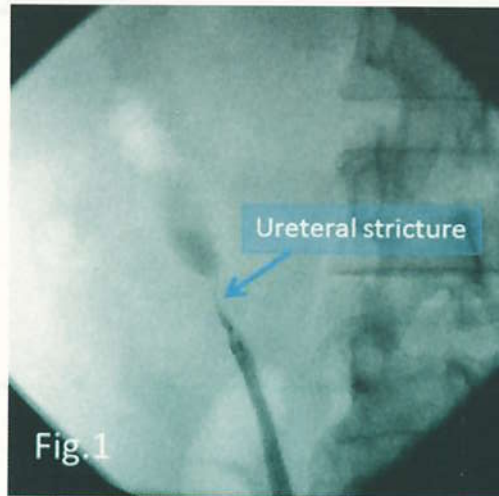


Normal System

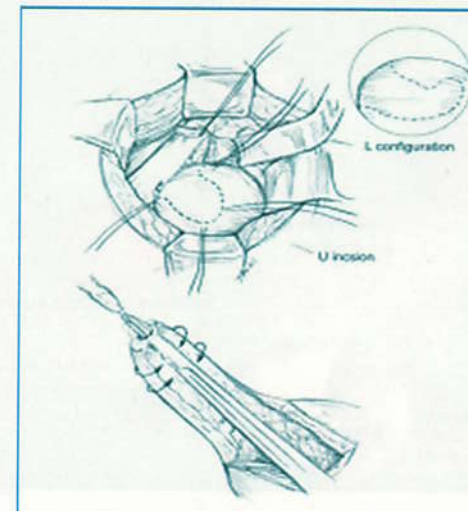
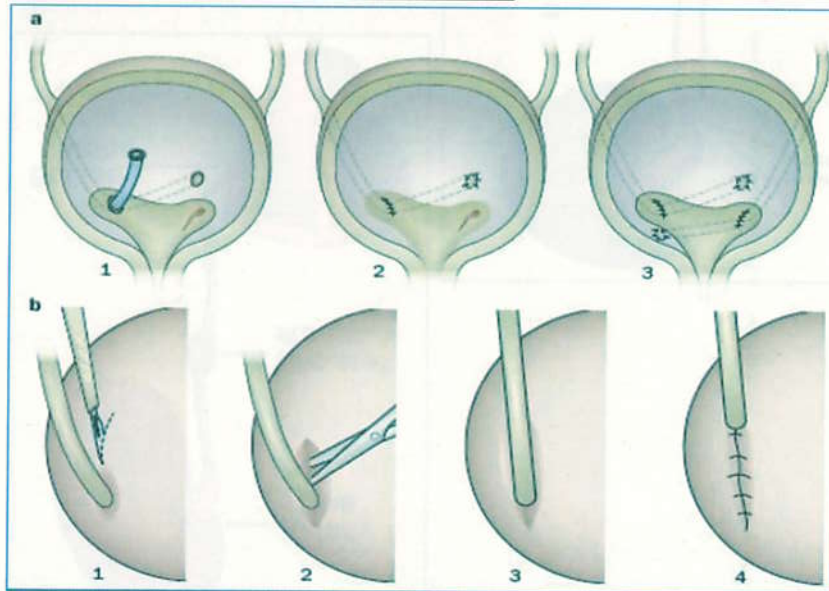


Ureterovesical Junction Obstruction



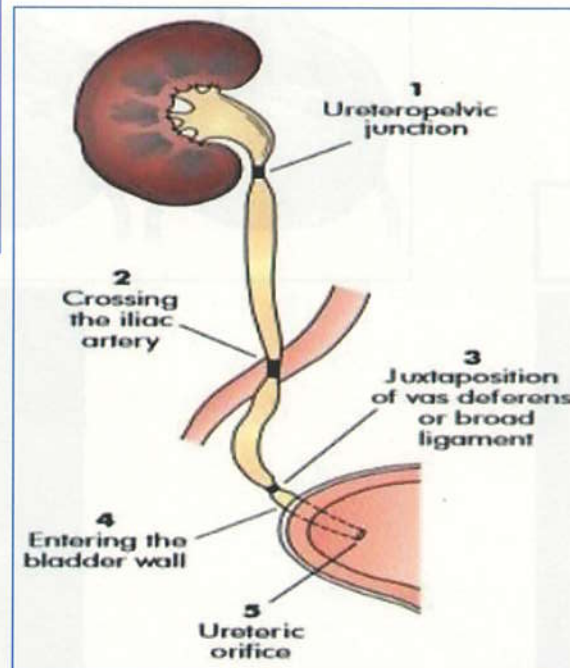
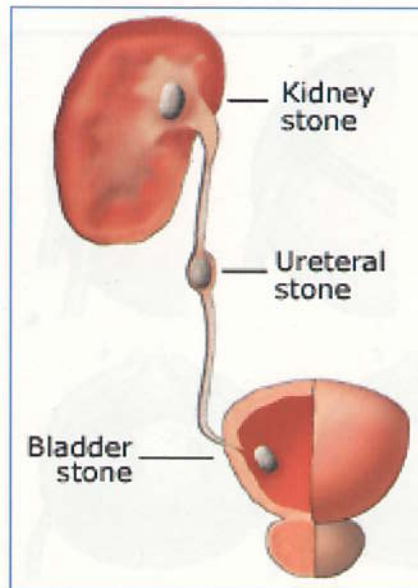


Follow-up excretory urography shows a persistent hydroureter



Boari flap

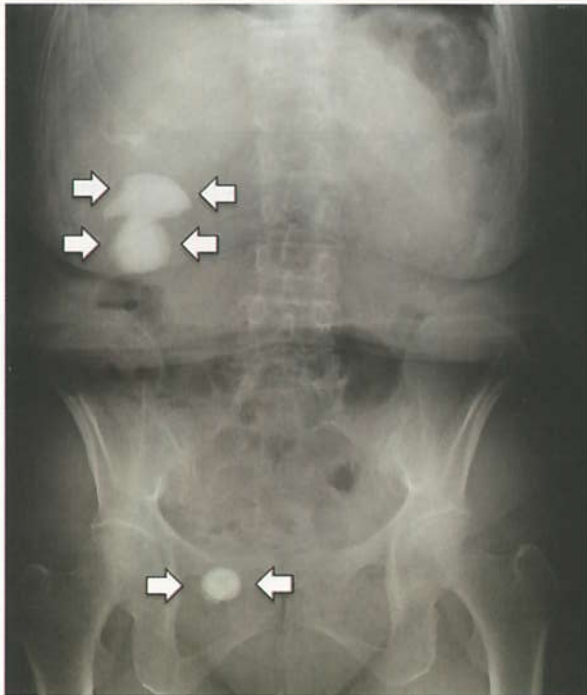
Urinary stones



Sites of stones impaction



Types of urinary stones



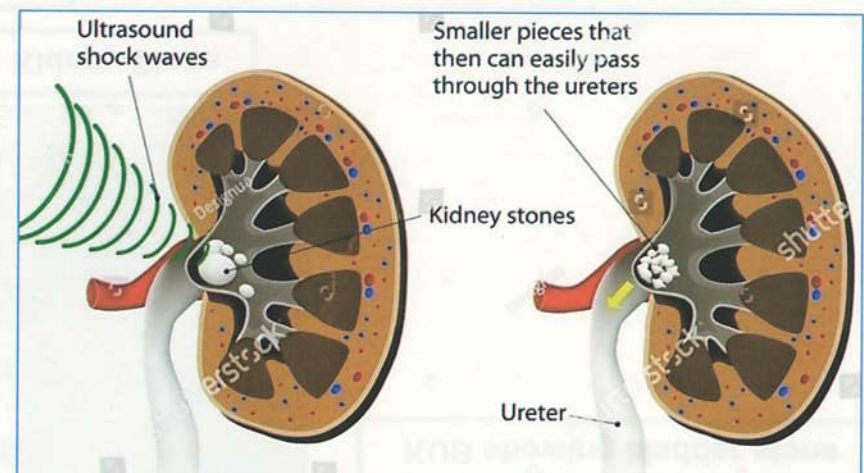
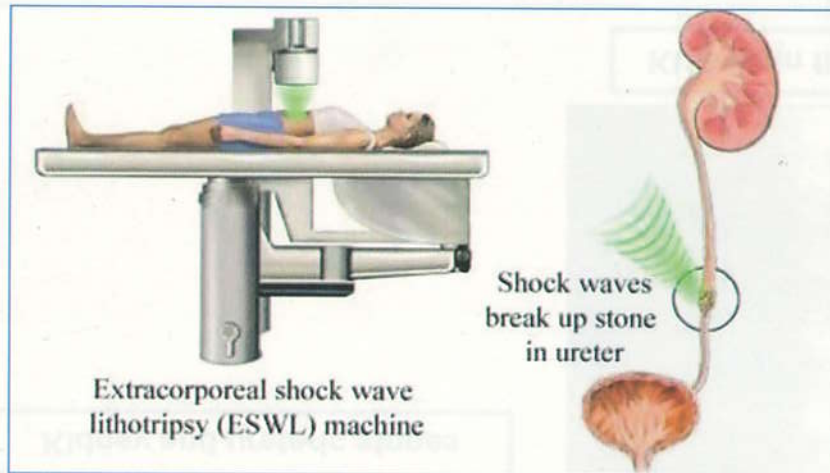
Kidney and ureteric stones



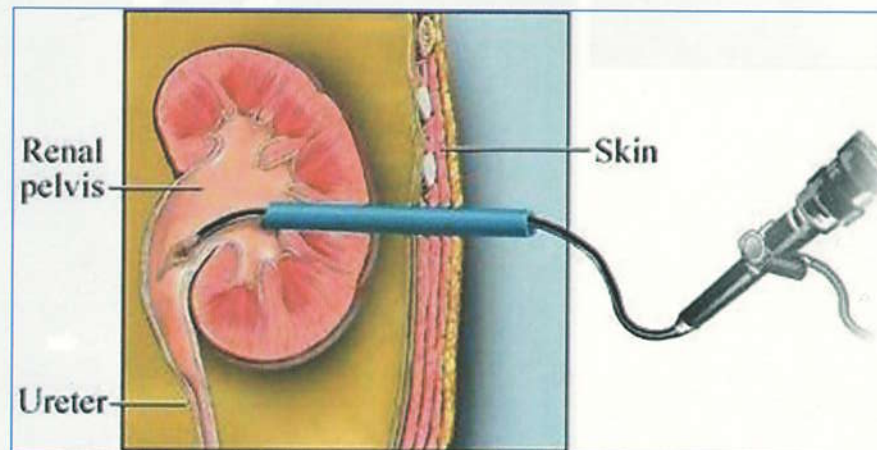
KUB plain film: Kidney Stone



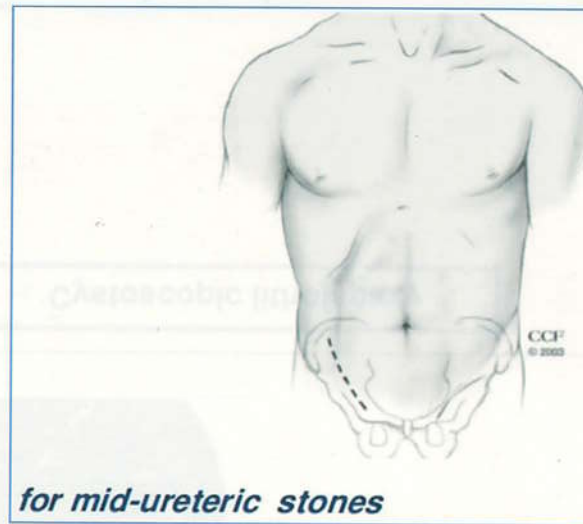
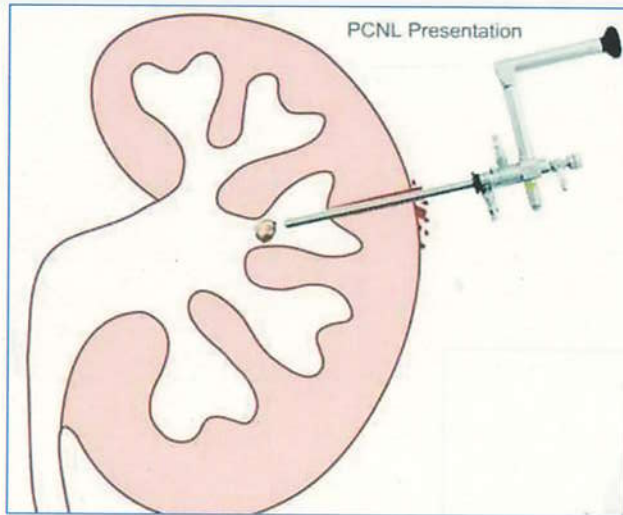
KUB showing bladder stone



Extracorporeal shockwave lithotripsy



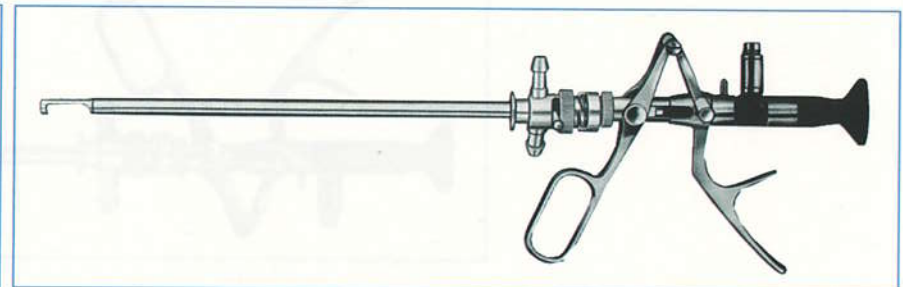
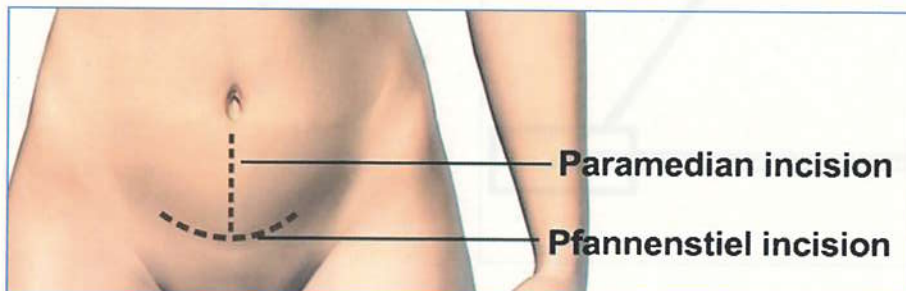
Percutaneous nephrolithotomy (PCNL)



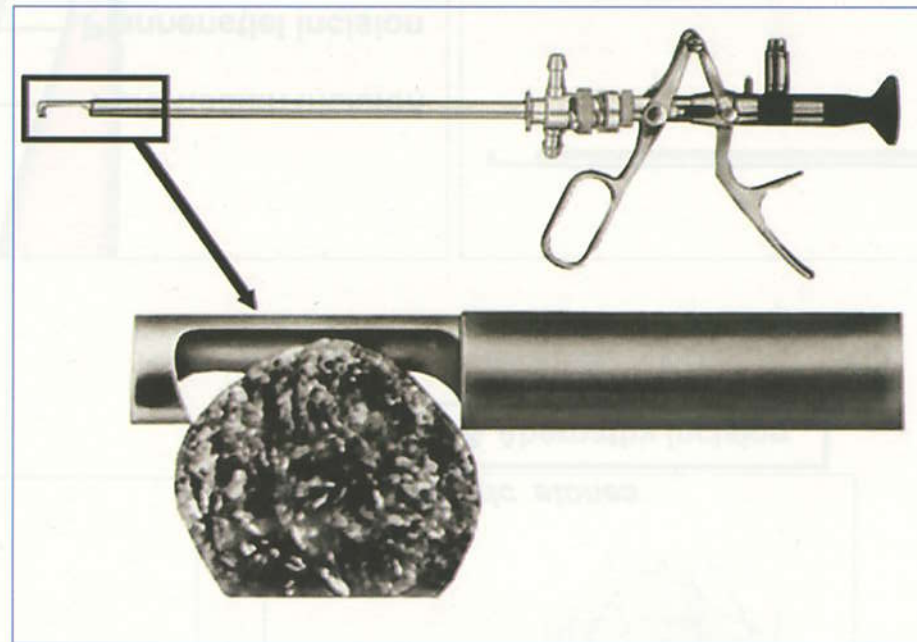
Gibson & Abernathy incision



Lumbar incision

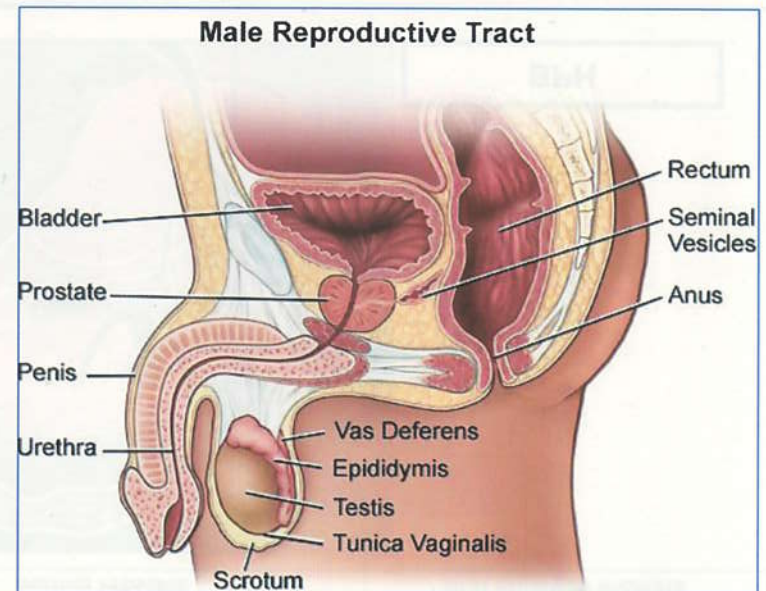
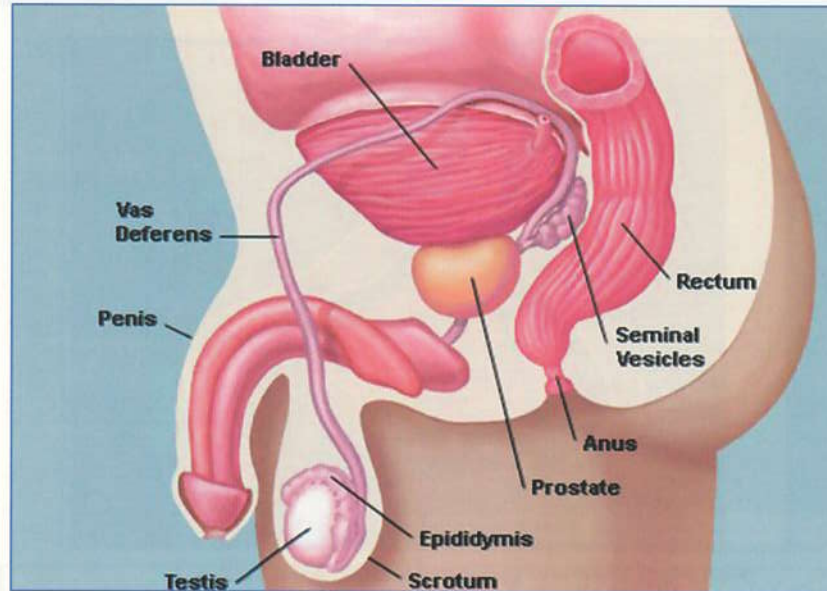


Cystoscopy & litholapaxy

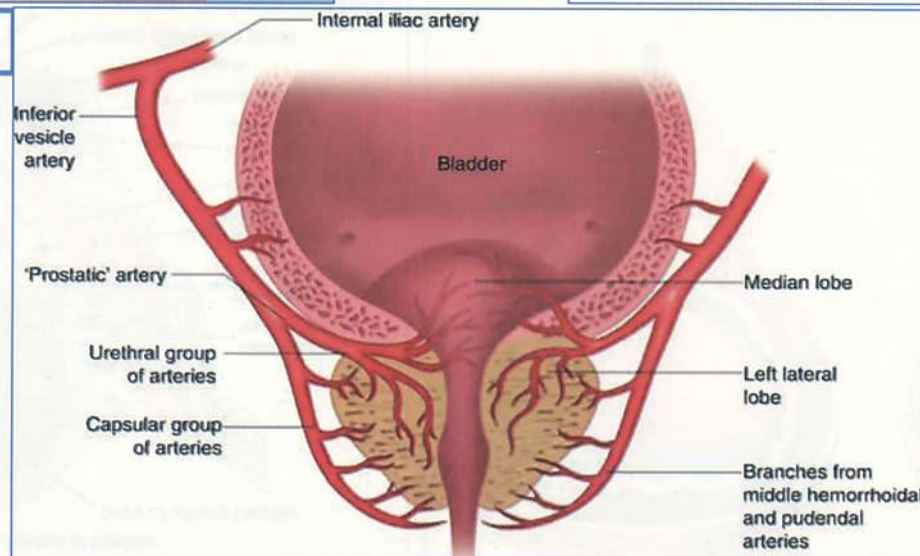


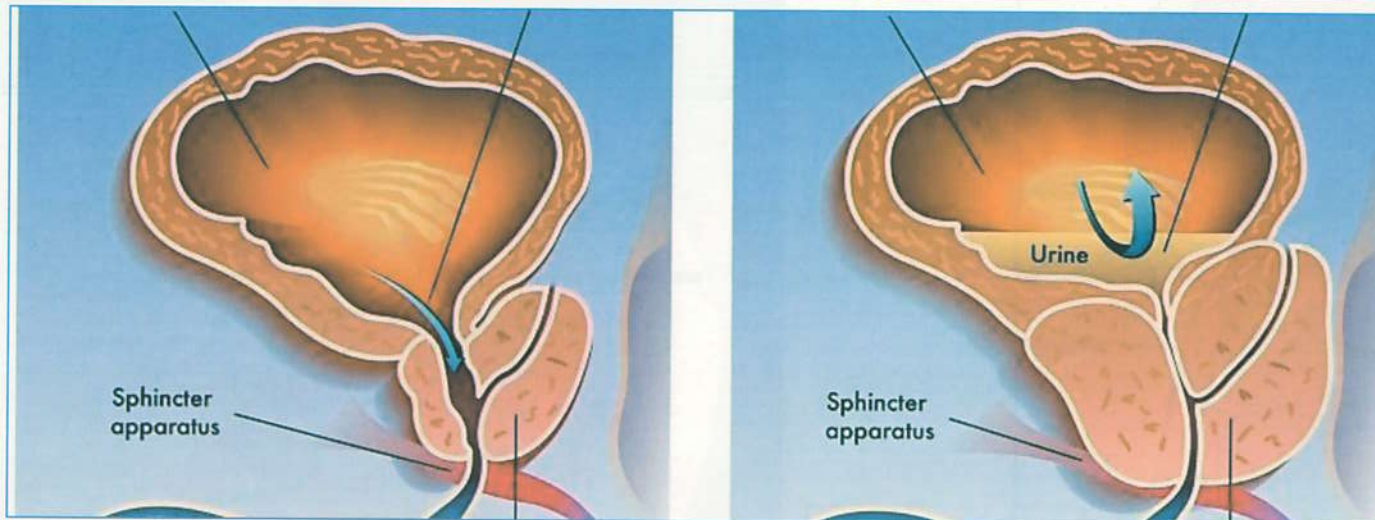
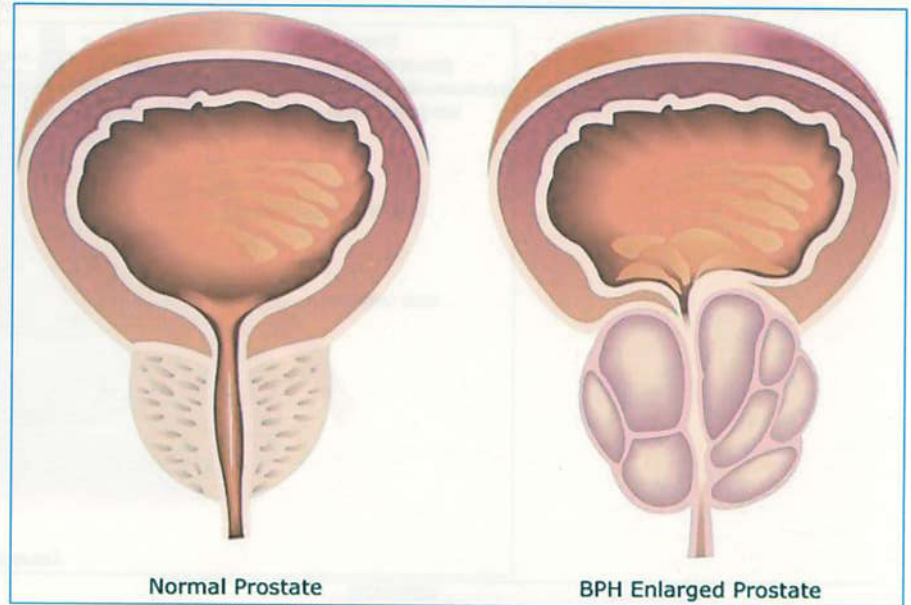
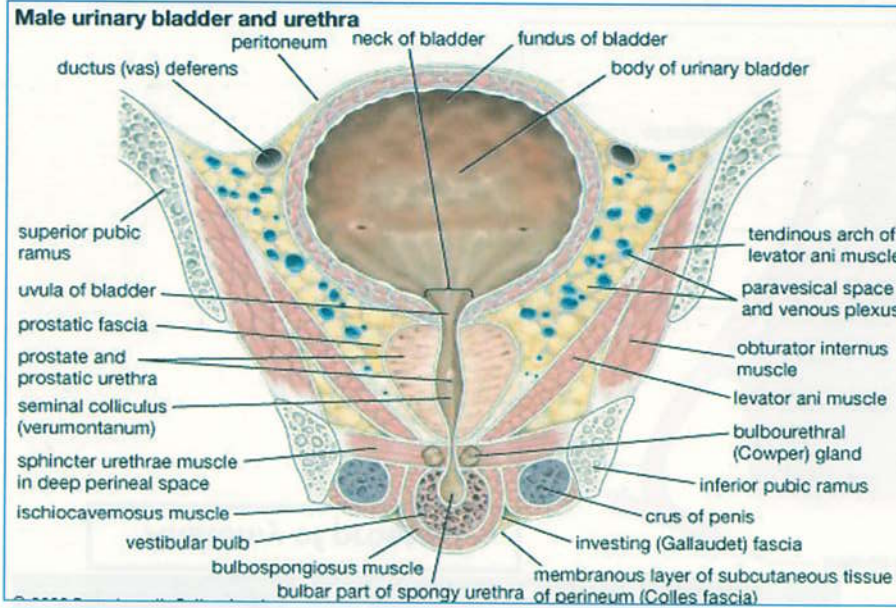
Cystoscopic litholapaxy

BPH

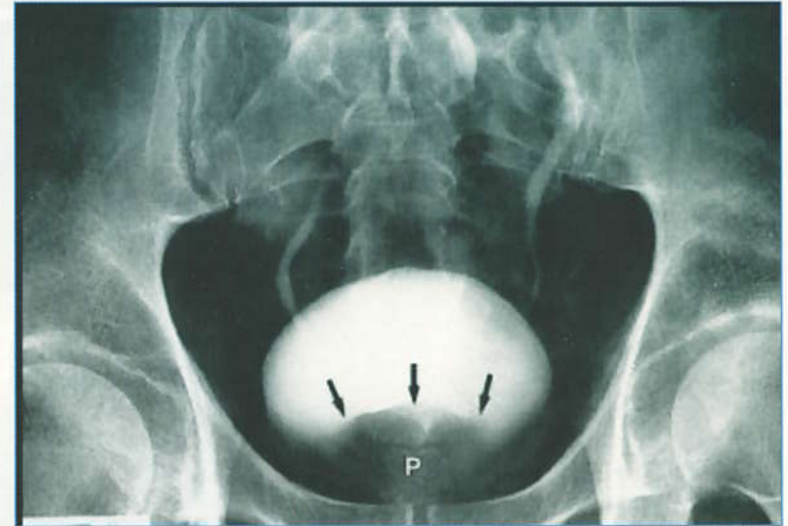


Anatomy of prostate

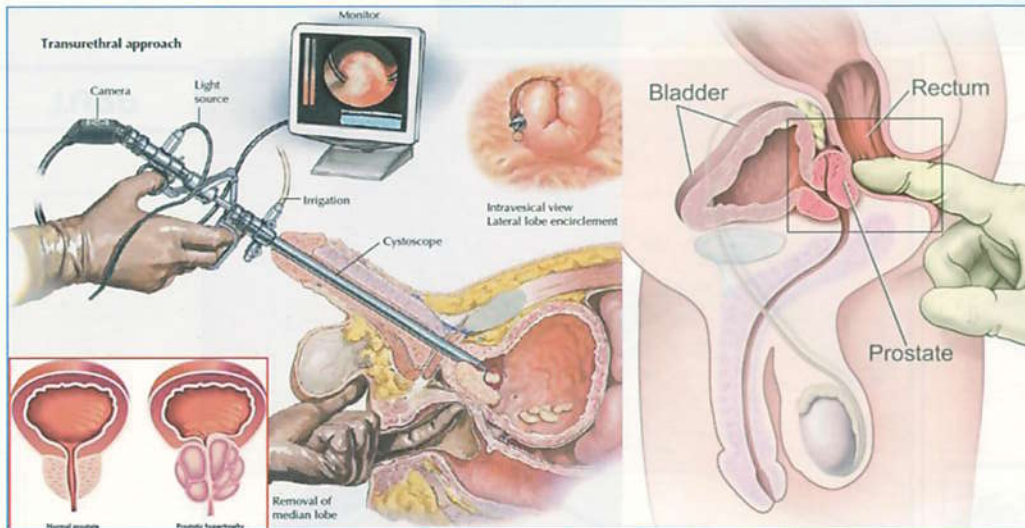




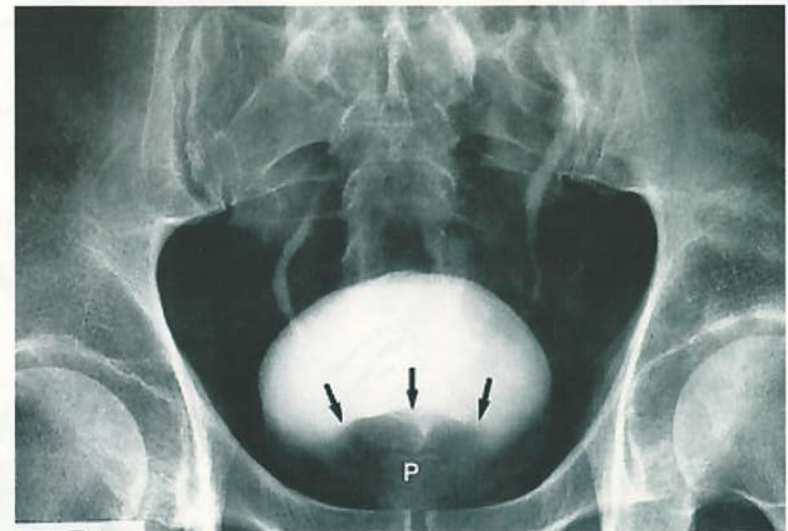
BPH

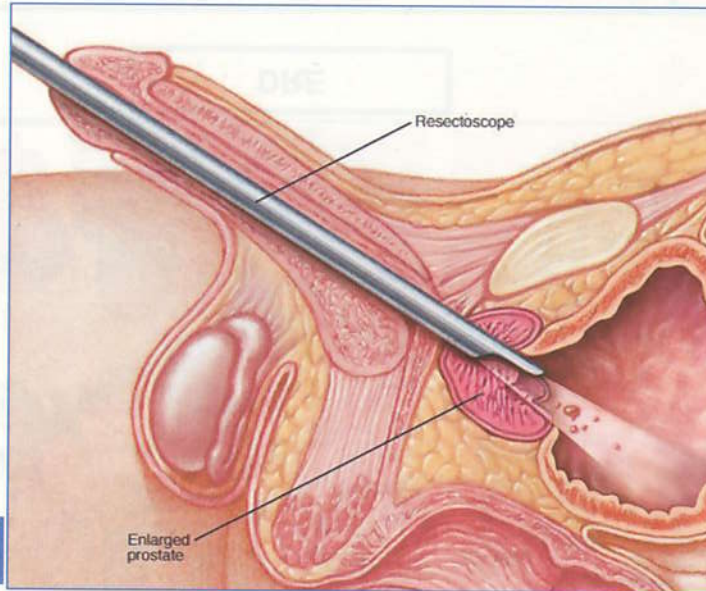


BPH

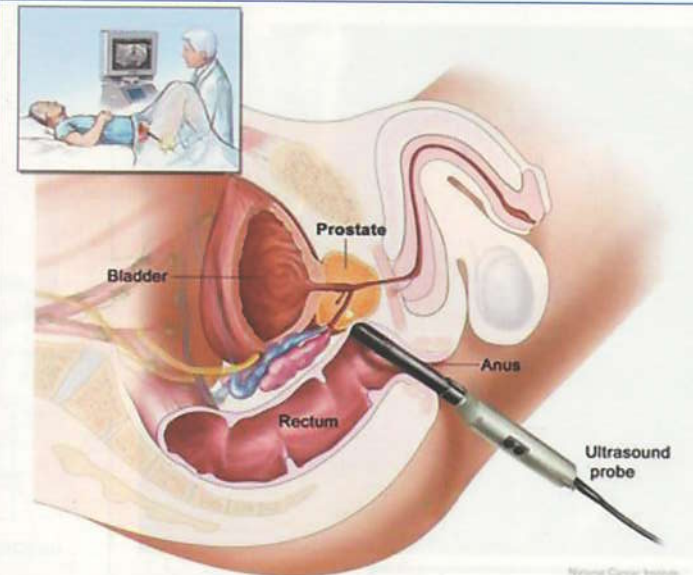


DRE





TURP

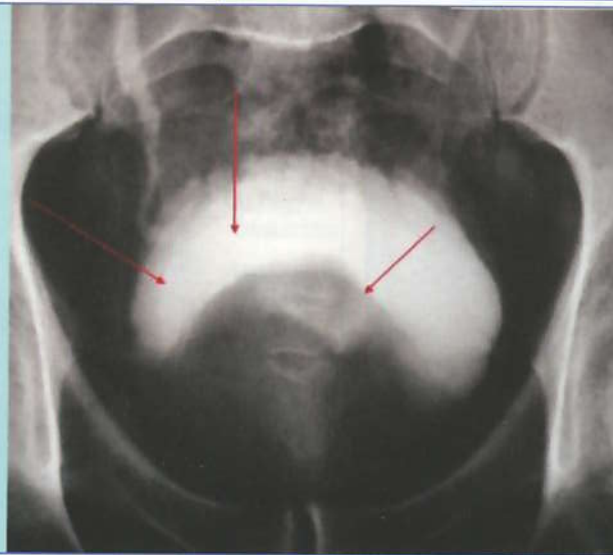


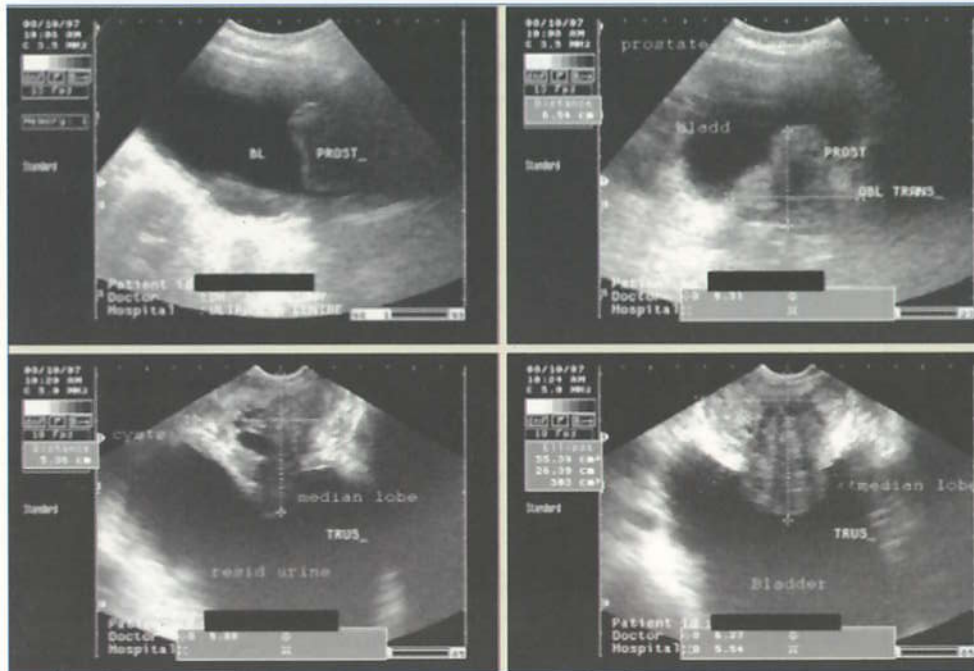
TRUS

CYSTOGRAM

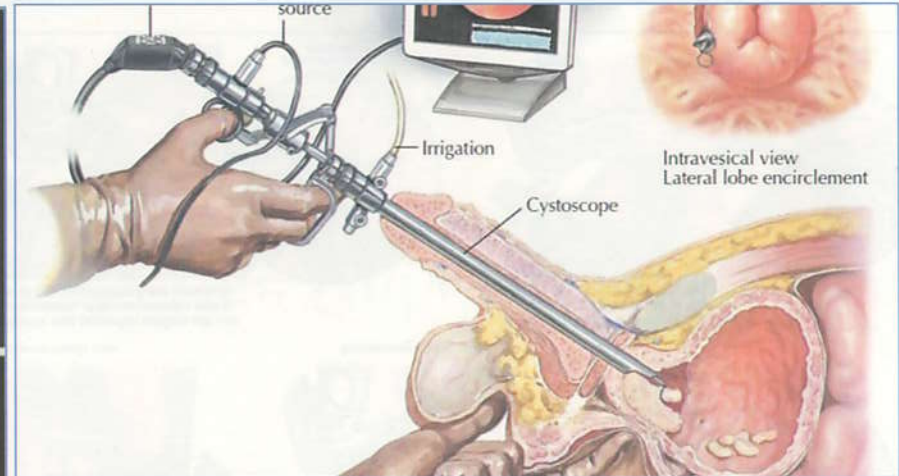
**CENTRAL
BASAL
SEMILUNAR
SMOOTH FILLING
DEFECT**

B P H





BPH



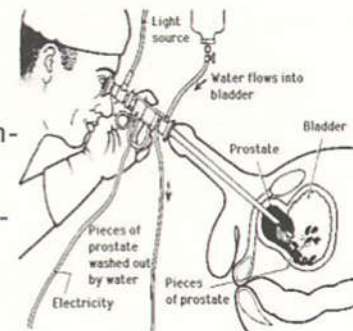
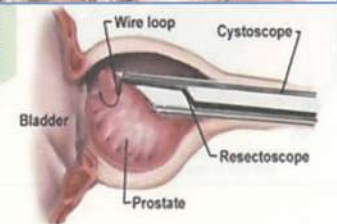
SURGICAL PROCEDURE

TURP - performed by inserting a .Resectoscope through urethra

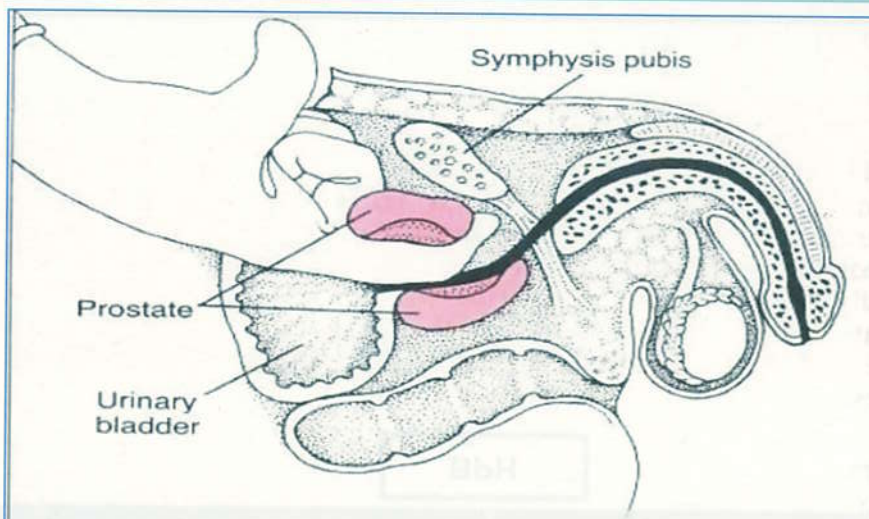
Prostatic tissue is resected into pieces- with an electrically powered cutting-coagulating metal loop

.Pieces washed out by irrigating solution-

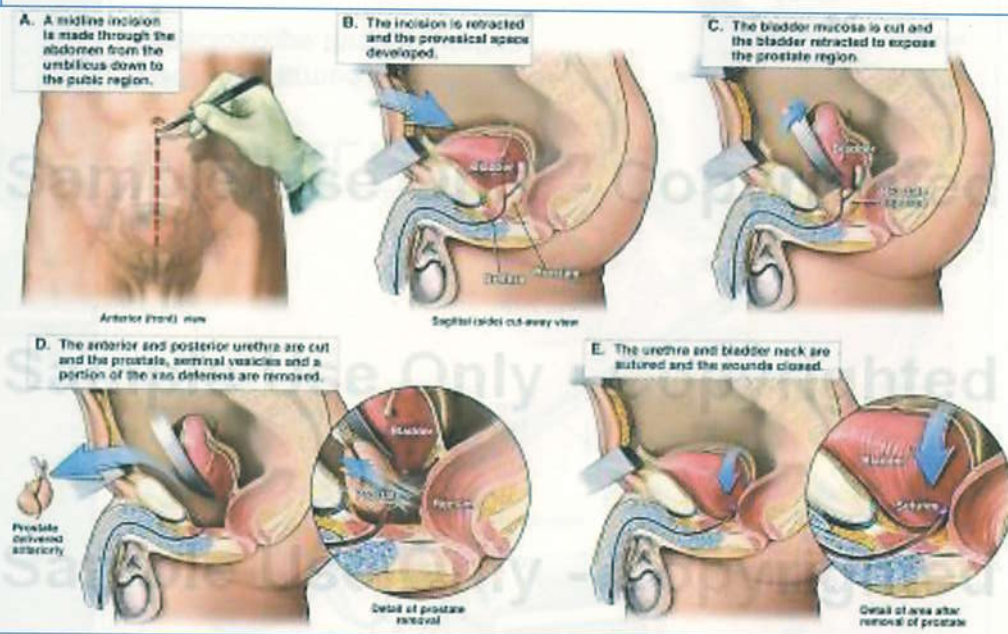
Prostatic capsule preserved- If violated, - large amounts of irrigating fluid is absorbed into circulation, periprostatic and retroperitoneal spaces



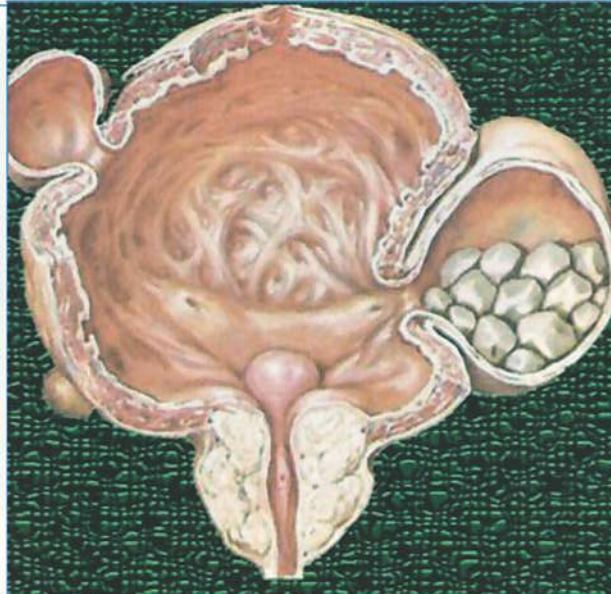
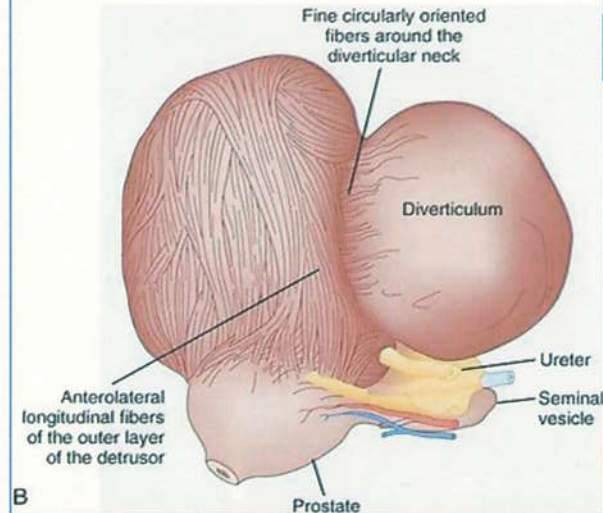
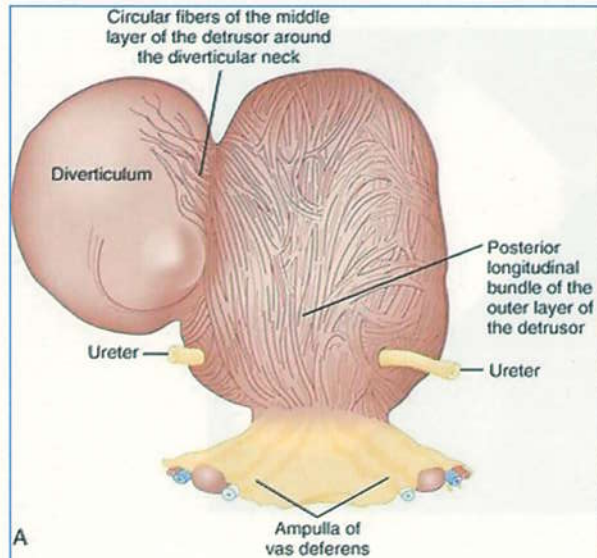
TURP



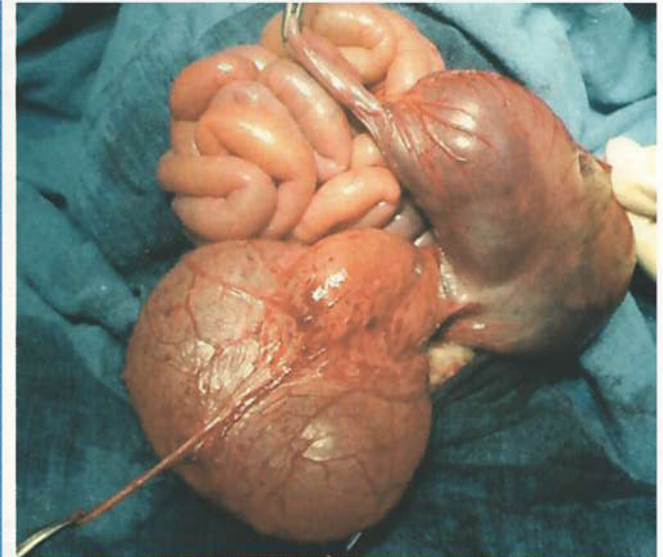
In **suprapubic, or transvesical, prostatectomy**, the surgeon approaches the prostate gland through an incision in the urinary bladder and uses a finger to remove the BPH tissue.



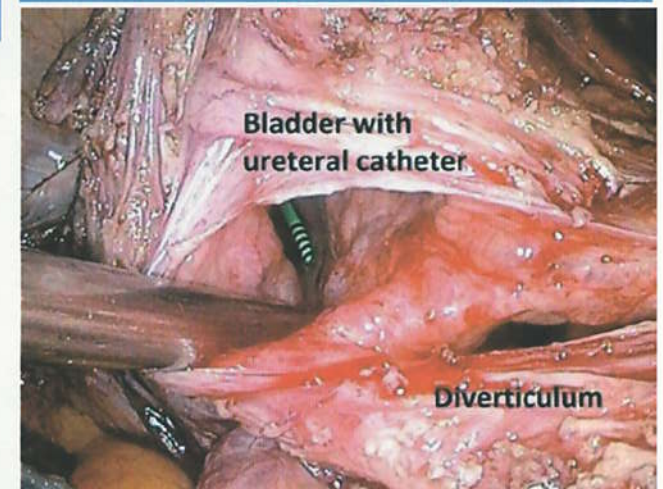
Radical retropubic prostatectomy



Bladder diverticulæ

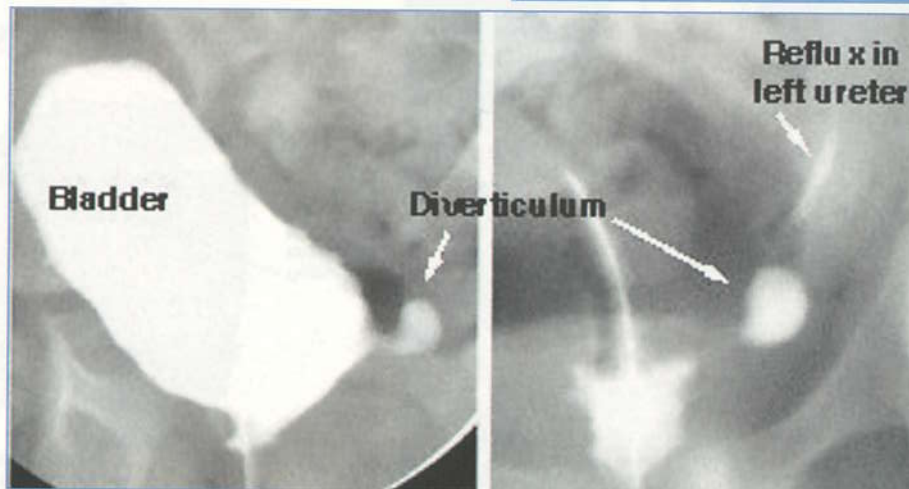


Bladder diverticula

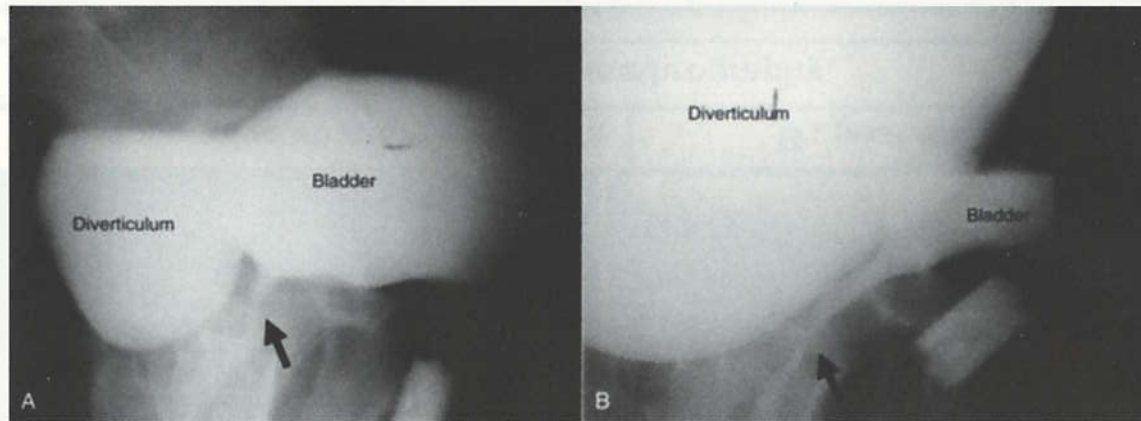




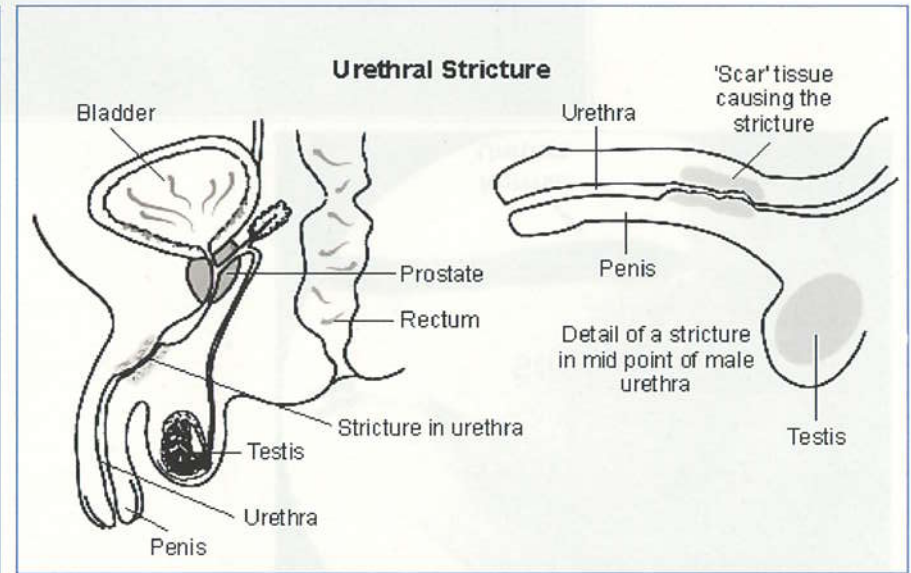
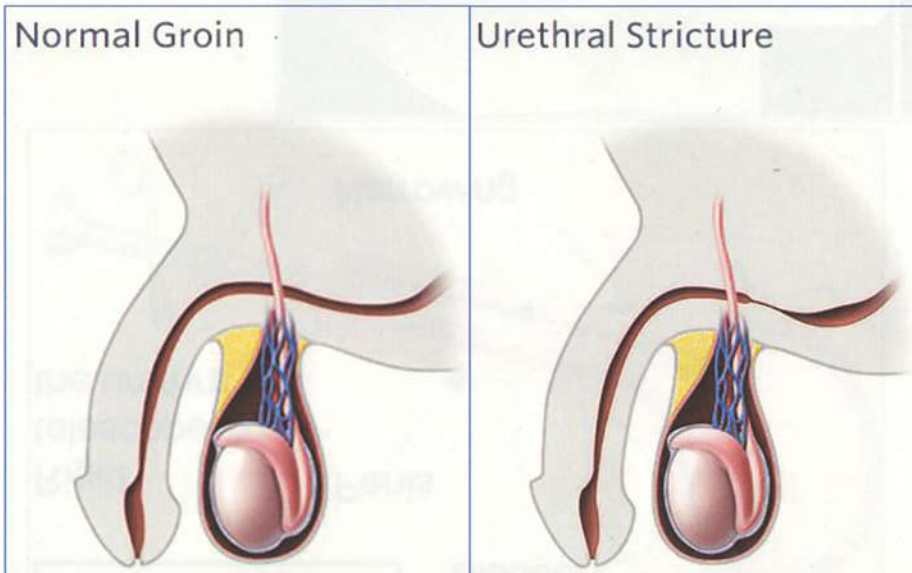
Ultrasound bladder diverticulum

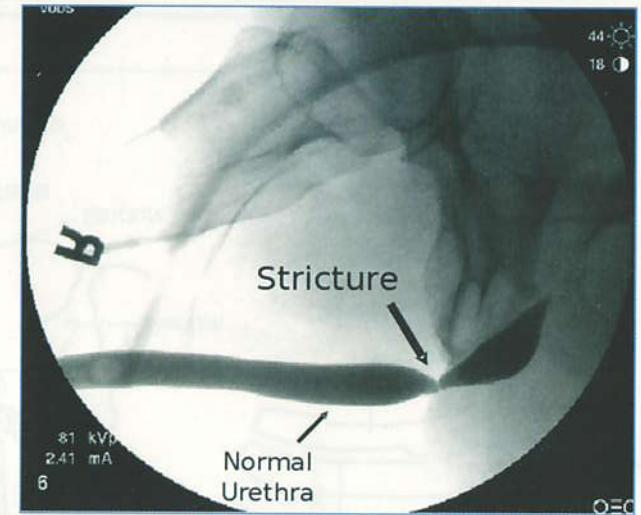
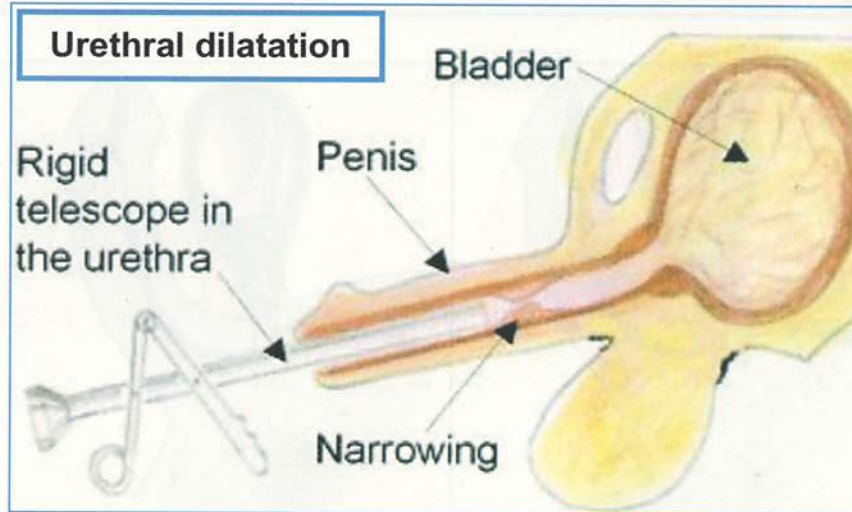


Bladder diverticulum



Voiding cystourethrogram (VCUG) demonstrating a bladder diverticulum in a male.





A . Preoperative stricture of urethra

B . post operative

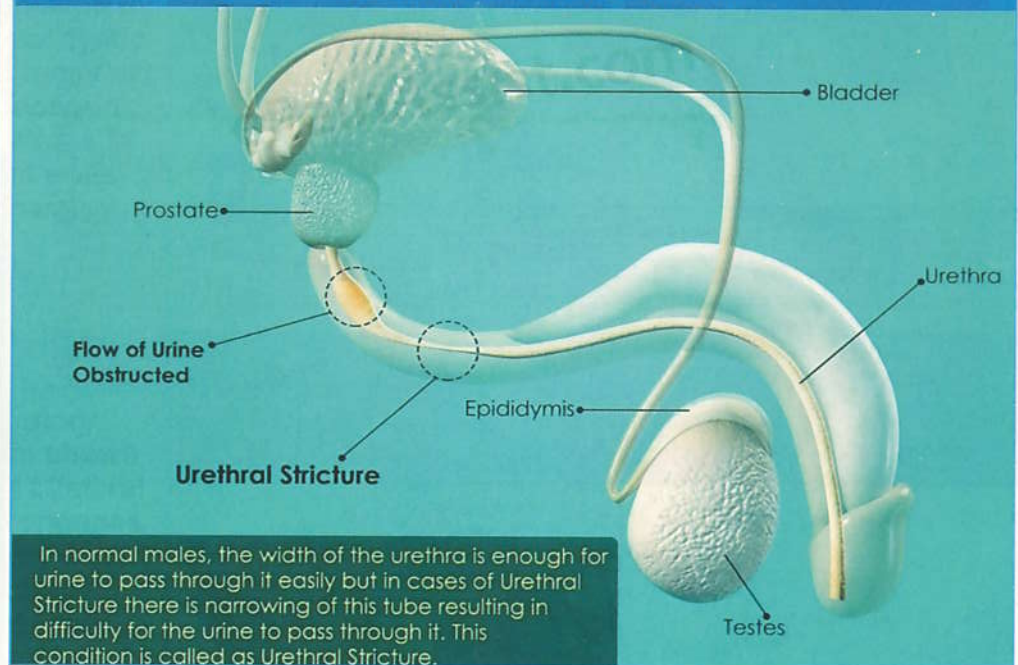
Retrograde urethrography

Symptoms Of Urethral Stricture

- Reduced volume of urine output
- Increased urinary frequency and urgency
- Painful urination
- Urinary incontinence
- Abdominal or pelvic pain
- Urethral discharge
- Swelling in the penile region
- Hematuria
- Dark colored urine



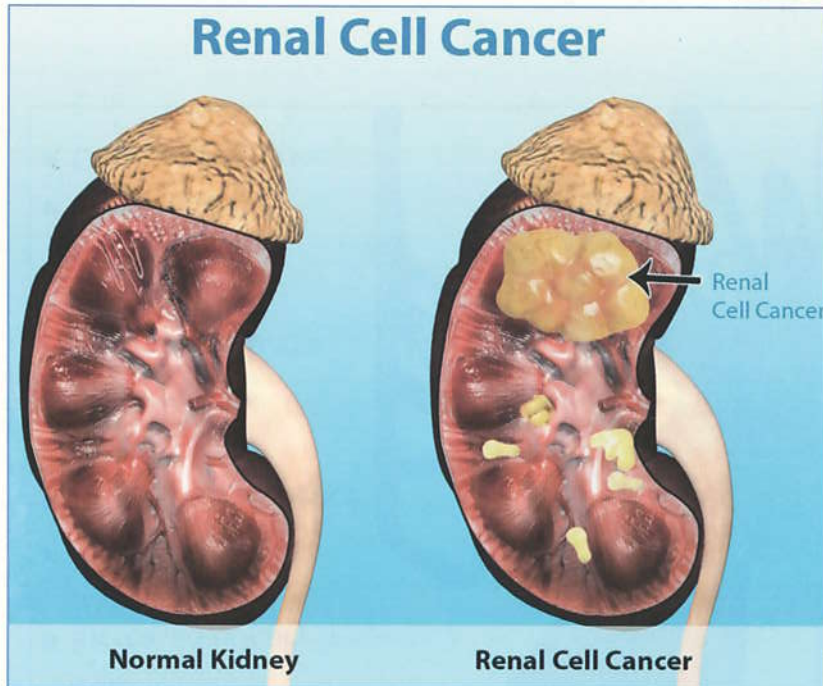
Urethral Stricture



In normal males, the width of the urethra is enough for urine to pass through it easily but in cases of Urethral Stricture there is narrowing of this tube resulting in difficulty for the urine to pass through it. This condition is called as Urethral Stricture.

Urological tumors

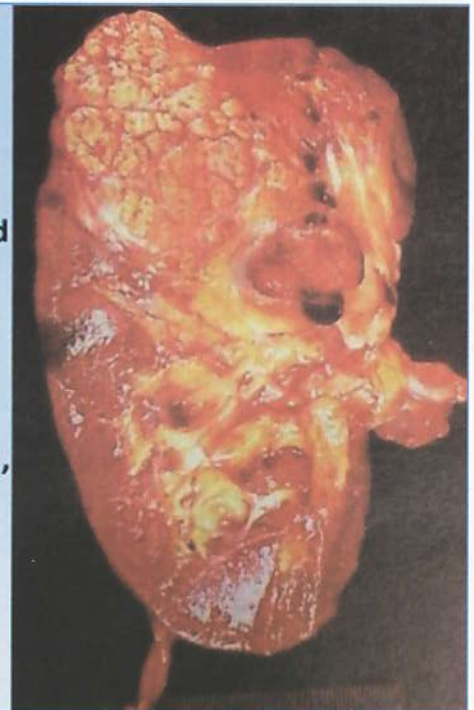
Renal Cell Cancer

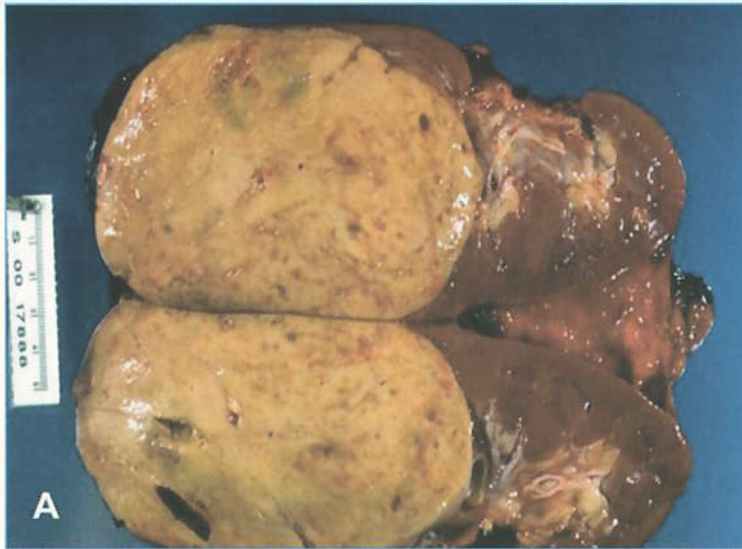


MORPHOLOGY:

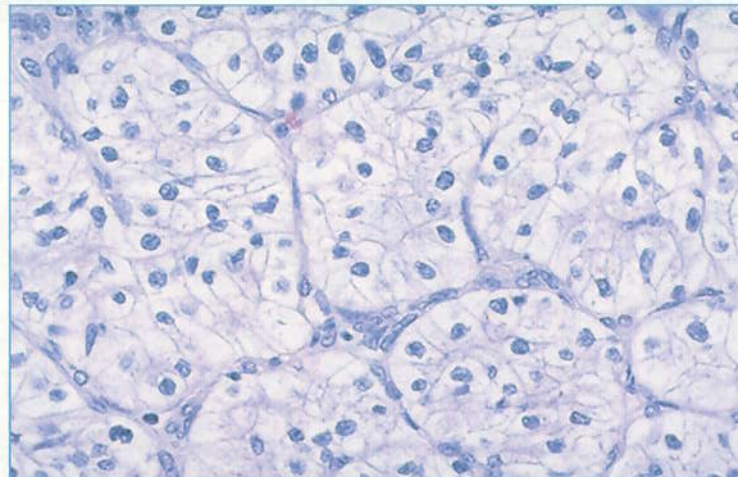
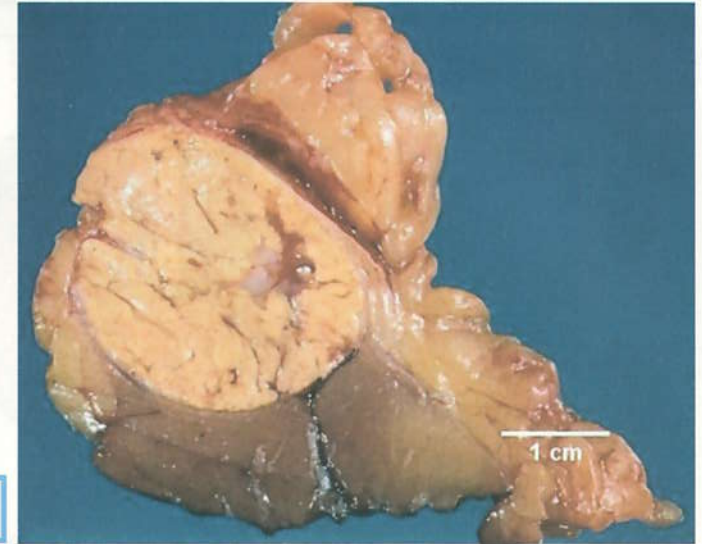
1. Arise from proximal tubular epithelium.
2. Solitary unilateral lesions.
3. Well defined margins and confined to the renal capsule
4. Spherical masses
5. Variegated areas that distorts the renal outline.
6. Large areas of *ischemic, *opaque, gray-white necrosis, *foci of haemorrhagic discolouration and *areas of softening.

RCC

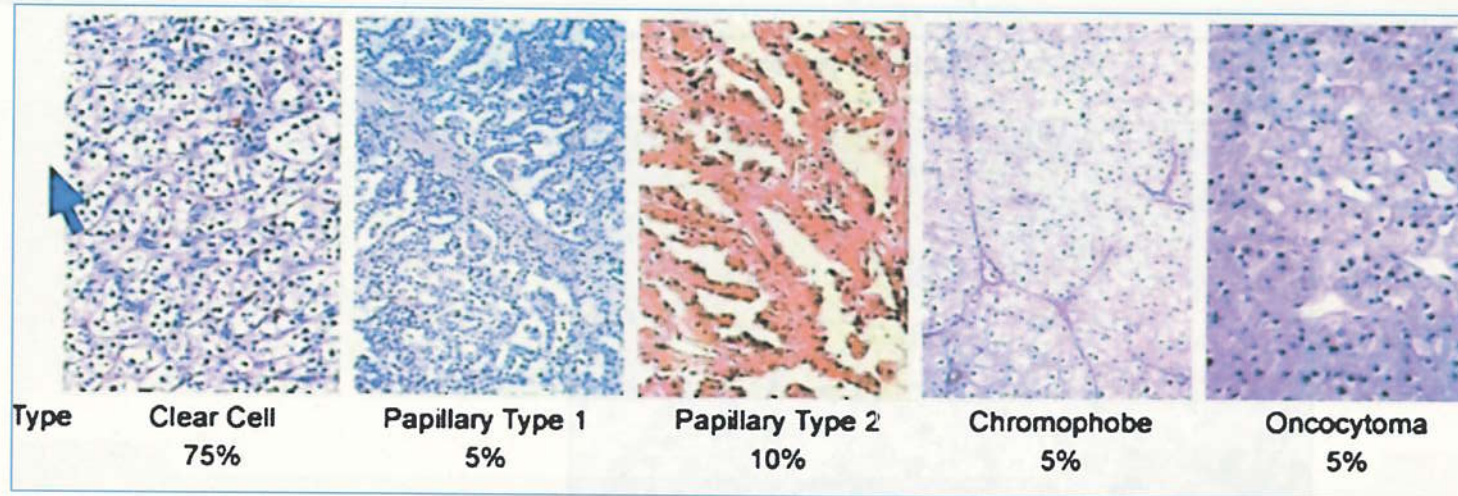




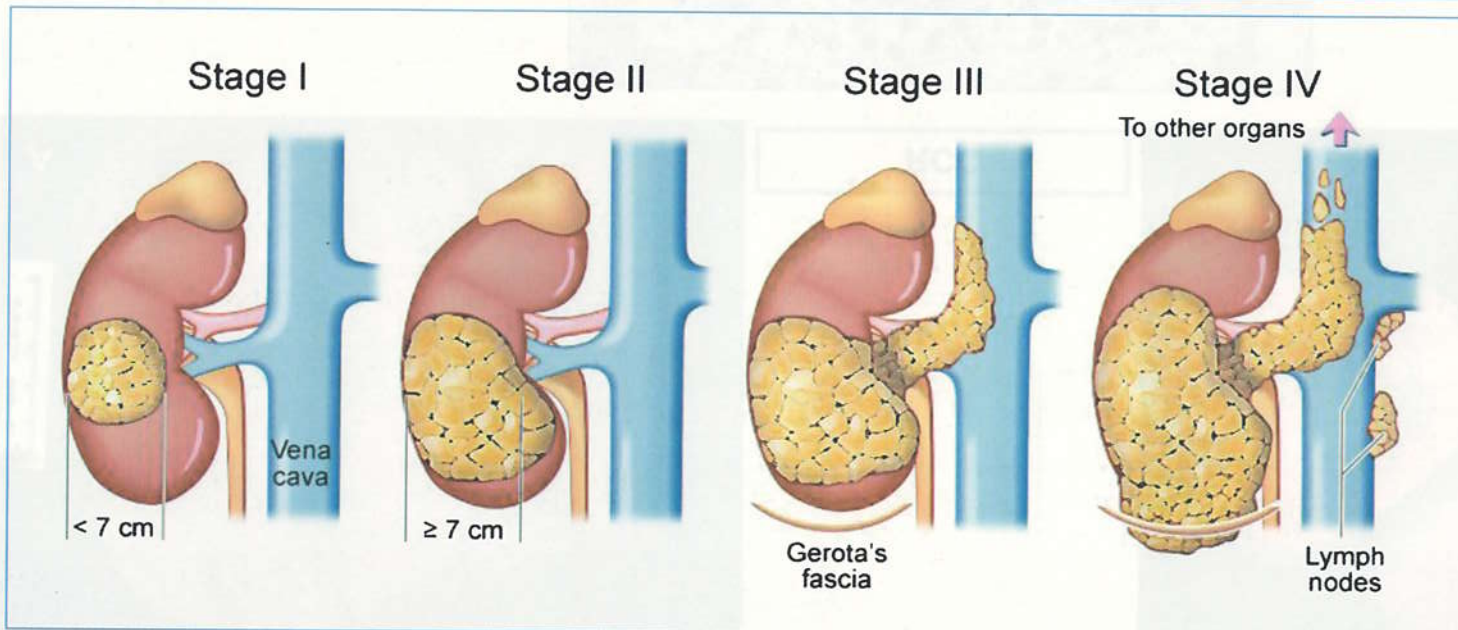
RCC



Renal pathology of RCC



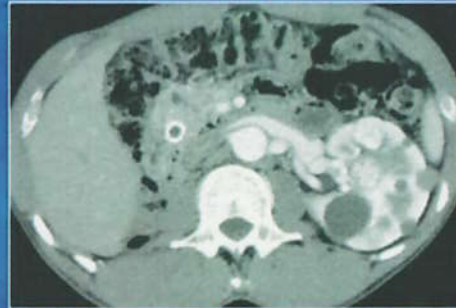
Kidney cancer



Staging of RCC

von Hippel-Lindau disease (VHL)**Renal cell carcinoma (25 – 45%)****Sagittal US of left kidney**

Multiple lesions of mixed echotexture
Multiple RCCs

CECT scan

Simple cysts
Solid enhancing lesions
Right nephrectomy (RCCs)
CBD stent (pancreatic cysts)

Renal cell carcinoma - IVU

- Normal.
- Mass effect on the collecting system.
- Distortion of the renal contour.
- Enlargement of a portion of the kidney.
- Poor or absent contrast material excretion
- Calcifications.

NECT:

- Isodense, hypodense, or hyperdense.
- Calcifications may be present and are usually amorphous and internal.
- Metastasis.



Renal cell carcinoma - CT

- Variable solid or cystic.
- RCC can be isoechoic, hypoechoic, or hyperechoic.



Renal cell carcinoma - US



Wilms tumor (Nephroblastoma)

GENETICS, PRESENTATION, AND RADIOGRAPHIC FINDINGS OF WILMS TUMOR

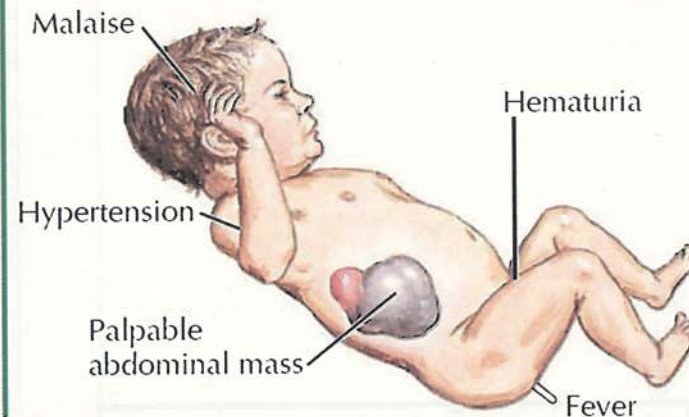
Genetics

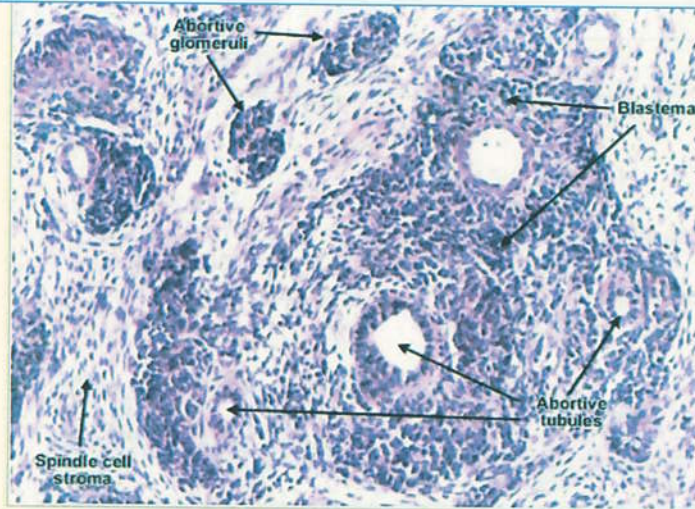


- *WT1* (11p13)
Denys-Drash syndrome
WAGR syndrome
- *TP53* (17p13)
- *FWT1* (17q12)
- *WT2* (11p15)
Beckwith-Wiedemann syndrome
- Loss of heterozygosity at 16q, 1p
- *FWT2* (19q13.3)

F. Netter M.D.

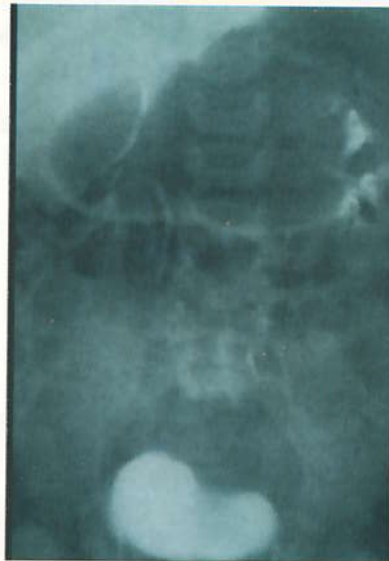
Common symptoms





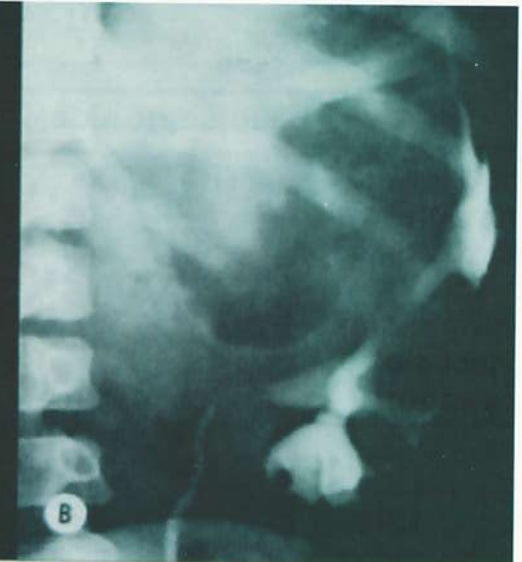
Wilms' tumor (nephroblastoma) : metanephric blastema, stromal and epithelial components. (H&E, ob. x20)

Wilms tumor (Nephroblastoma)



Large soft tissue mass displacing bowel gas and distorting and displacing the collecting system.

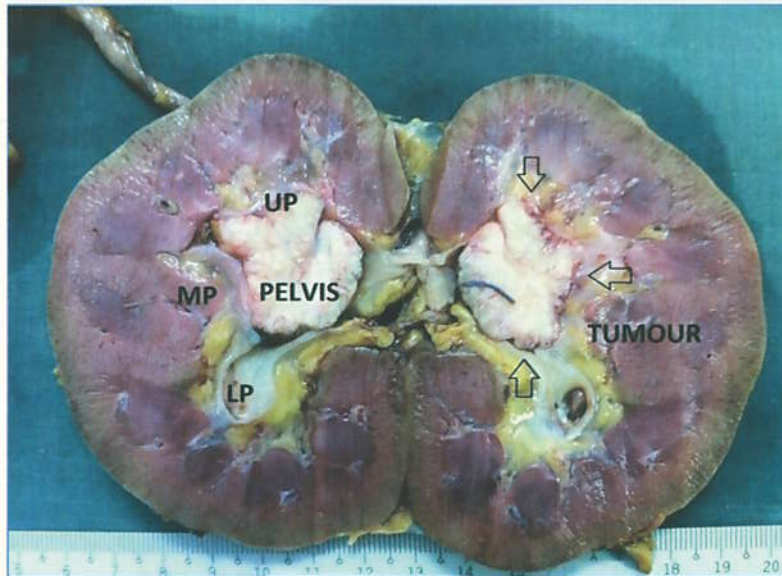
Wilms tumor - IVU



Plain X-Ray:

Large soft tissue mass
displacing bowel gas
Calcification is uncommon.

Wilms tumor – plain X-ray

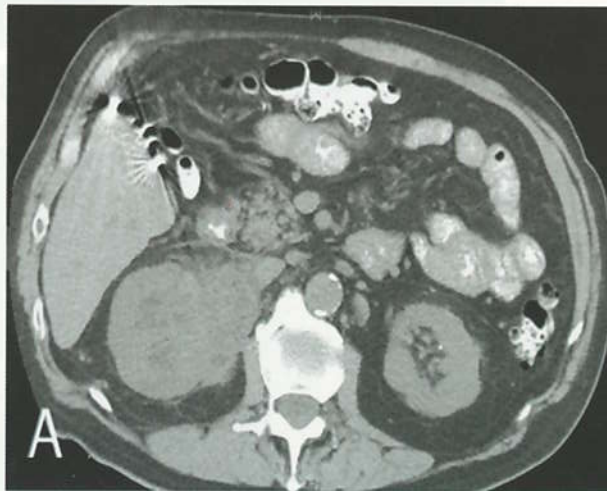


TCC left renal pelvis & ureter
Goblet filling defect lower ureter

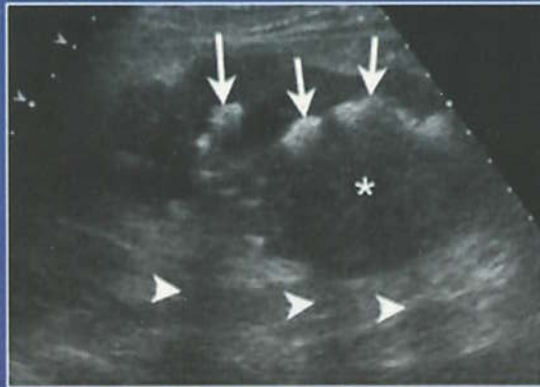
TCC of renal pelvis

Transitional cell carcinoma TCC

- The most common renal pelvic tumor.
- Multiple lesions in about 30% of cases.
- Filling defects in the pelvis.
- Detected by IVU, CT, MRU.



Longitudinal US of left kidney



Enlarged kidney

Chunky calcification with AS

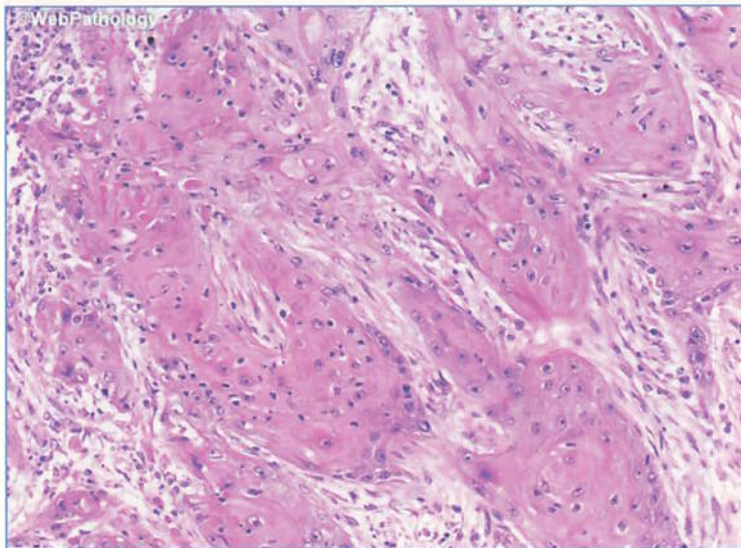
CFD of left kidney



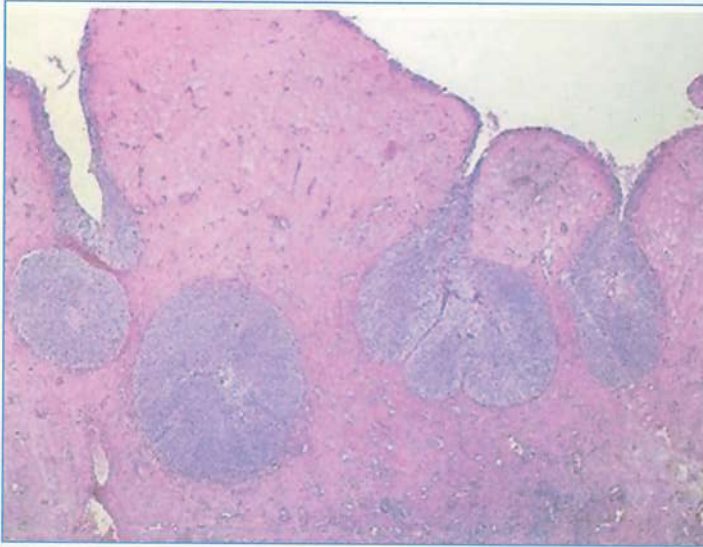
Increased vascularity in the mass

Large areas of necrosis

**Squamous cell carcinoma
of renal pelvis**



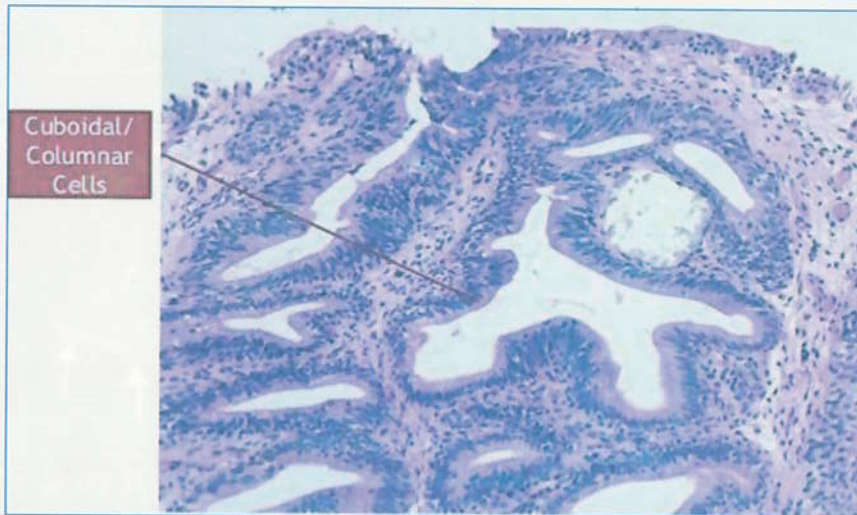
Squamous cell carcinoma of urinary bladder



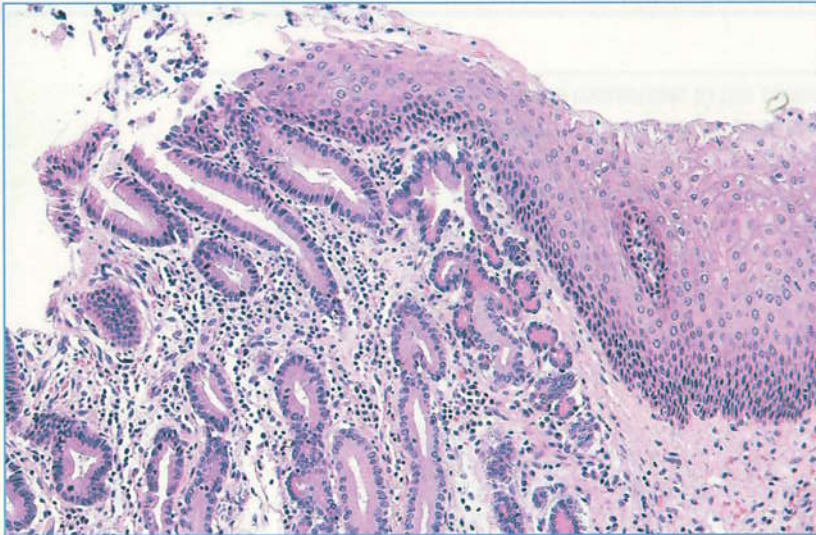
Von Brunn nests



Cystitis cystica



Cystitis glandularis



Squamous metaplasia UB



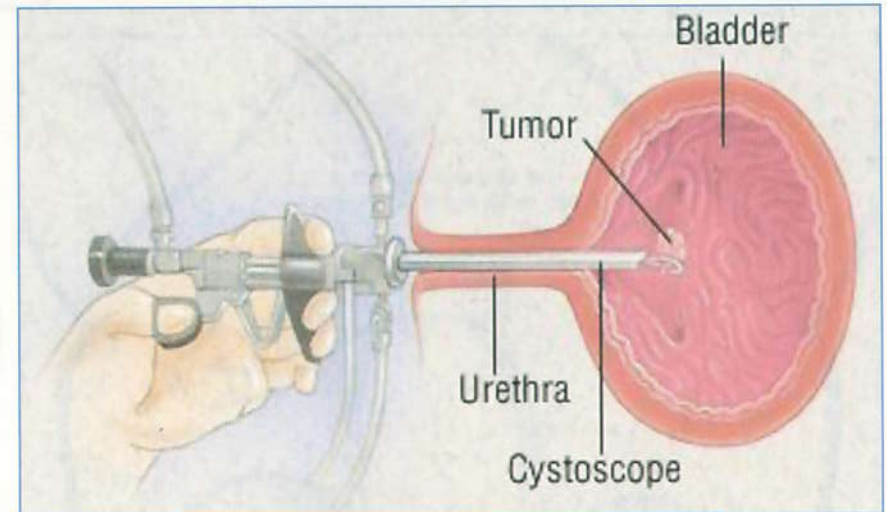
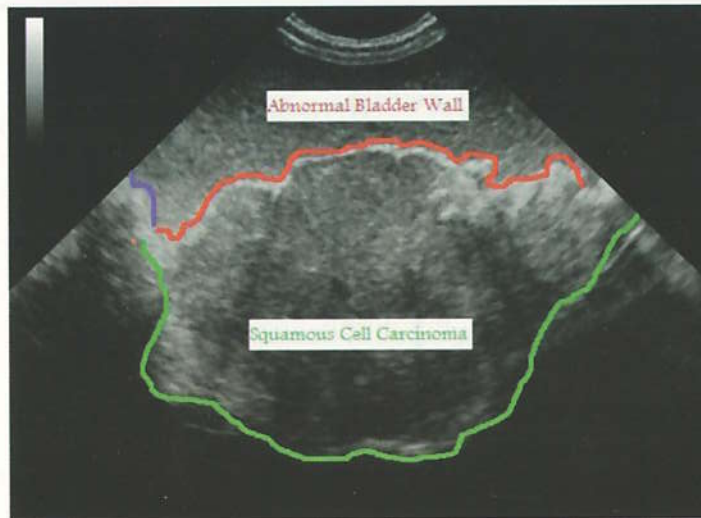
Leukoplakia bladder



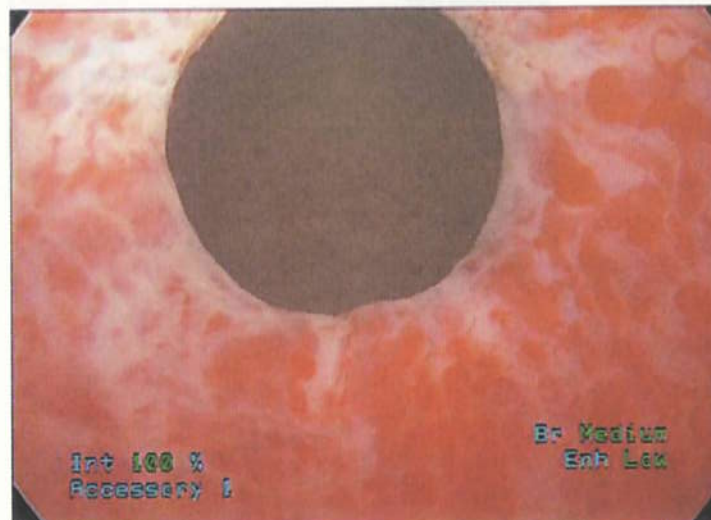
Nodular fungating type

URINARY BLADDER STAGING FORM

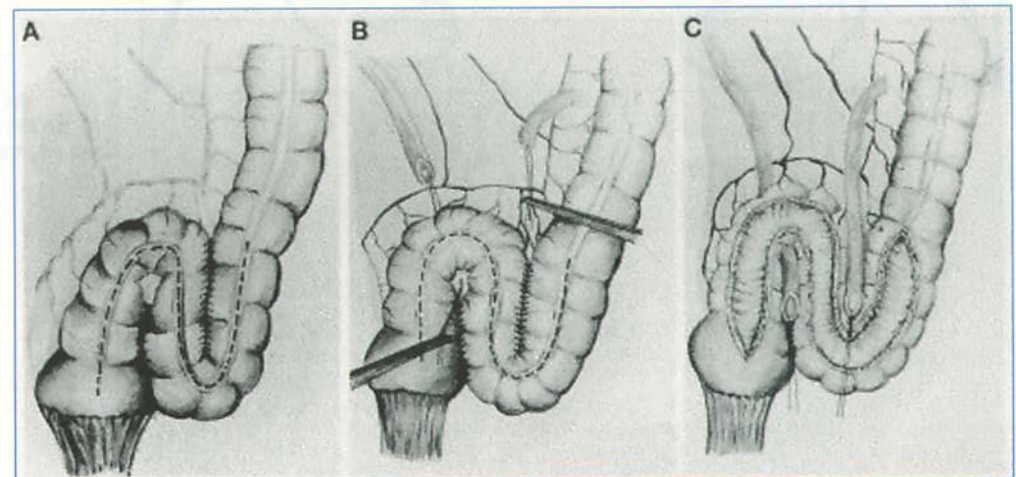
CLINICAL <i>Extent of disease before any treatment</i>	STAGE CATEGORY DEFINITIONS	PATHOLOGIC <i>Extent of disease through completion of definitive surgery</i>
PRIMARY TUMOR (T)		
☐ TX	Primary tumor cannot be assessed	☐ TX
☐ T0	No evidence of primary tumor	☐ T0
☐ Ta	Non-invasive papillary carcinoma	☐ Ta
☐ Tis	Carcinoma <i>in situ</i> : "flat tumor"	☐ Tis
☐ T1	Tumor invades subepithelial connective tissue	☐ T1
☐ T2	Tumor invades muscularis propria	☐ T2
☐ pT2a	Tumor invades superficial muscularis propria (inner half)	☐ pT2a
☐ pT2b	Tumor invades deep muscularis propria (outer half)	☐ pT2b
☐ T3	Tumor invades perivesical tissue	☐ T3
☐ pT3a	microscopically	☐ pT3a
☐ pT3b	macroscopically (extravesical mass)	☐ pT3b
☐ T4	Tumor invades any of the following: prostatic stroma, seminal vesicles, uterus, vagina, pelvic wall, abdominal wall	☐ T4
☐ T4a	Tumor invades prostatic stroma, uterus, vagina	☐ T4a
☐ T4b	Tumor invades pelvic wall, abdominal wall	☐ T4b
REGIONAL LYMPH NODES (N)		
Regional lymph nodes include both primary and secondary drainage regions. All other nodes above the aortic bifurcation are considered distant lymph nodes.		
☐ NX	Lymph nodes cannot be assessed	☐ NX
☐ N0	No lymph node metastasis	☐ N0
☐ N1	Single regional lymph node metastasis in the true pelvis (hypogastric, obturator, external iliac or presacral lymph node)	☐ N1
☐ N2	Multiple regional lymph node metastasis in the true pelvis (hypogastric, obturator, external iliac or presacral lymph node metastasis)	☐ N2
☐ N3	Lymph node metastasis to the common iliac lymph nodes	☐ N3



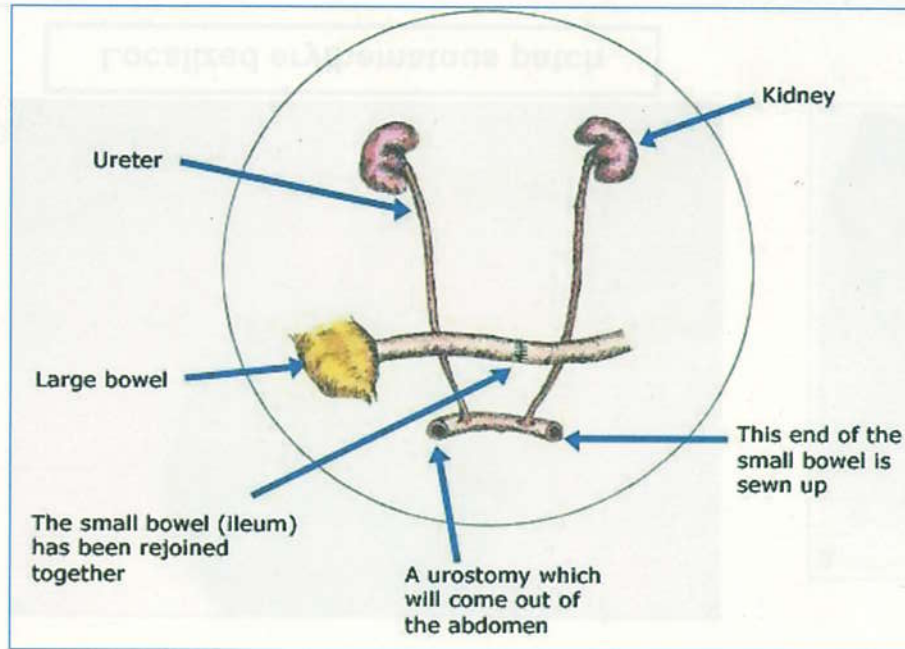
TUR operation



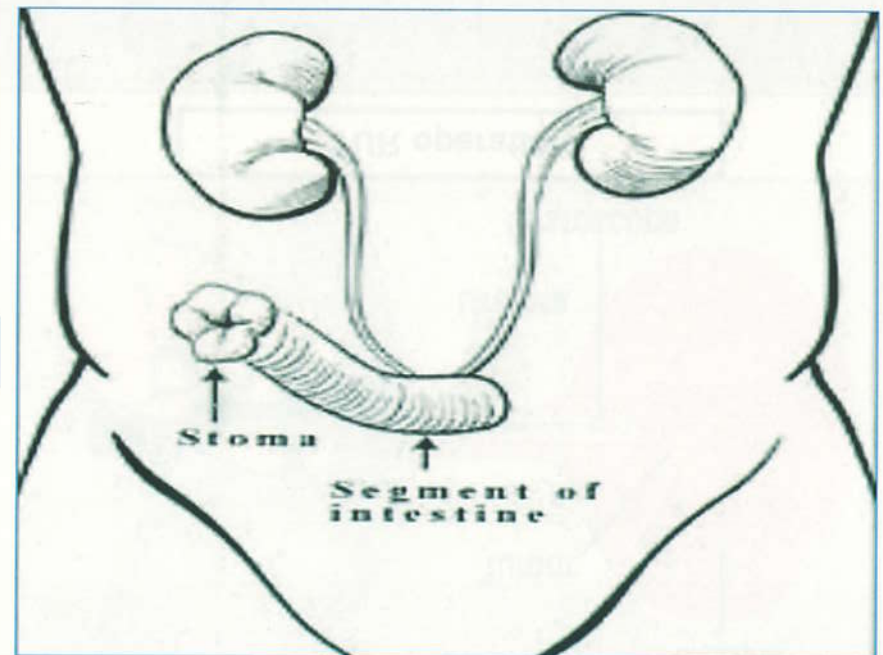
Localized erythematous patch



Uretero colic anastomosis



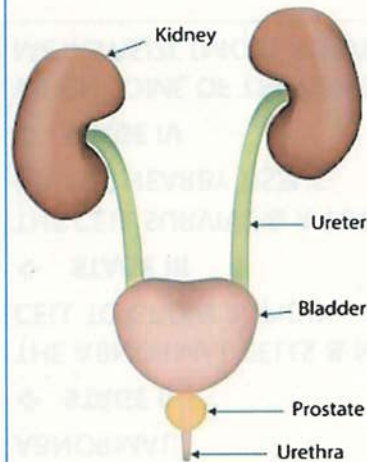
Ileal conduit



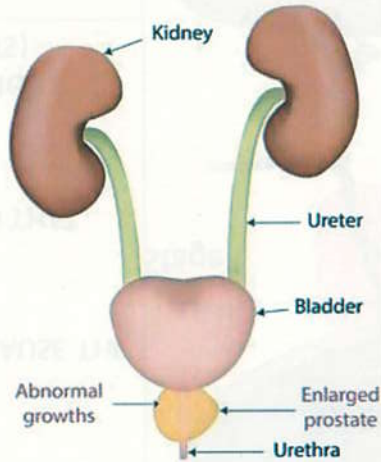
Cancer prostate

Prostate Cancer

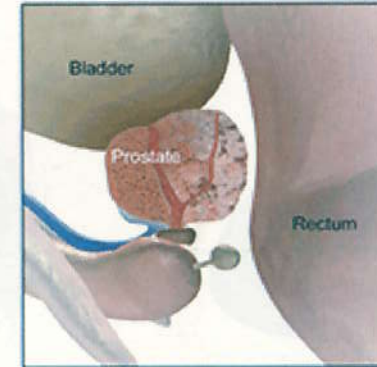
Healthy



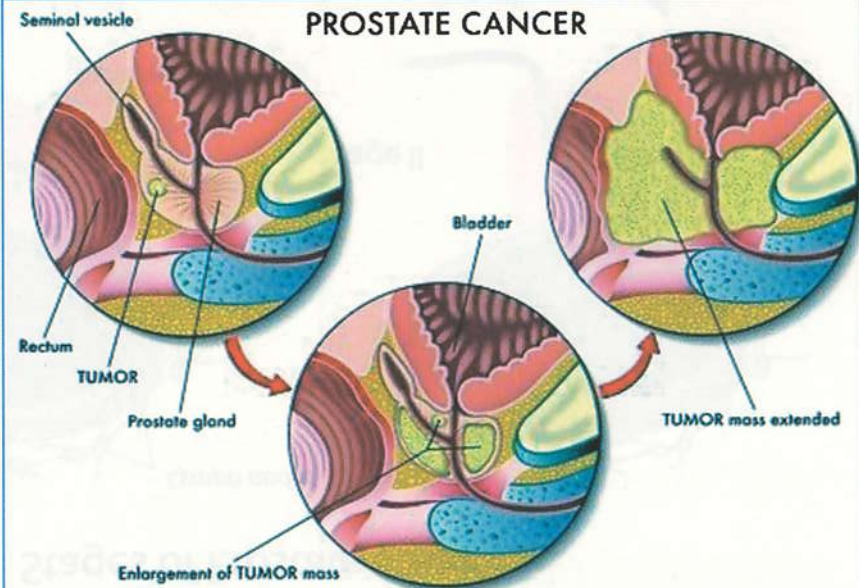
Prostate Cancer



Prostate Cancer



PROSTATE CANCER



THE CAUSE OF PROSTATE CANCER ISN'T CLEAR TO PHYSICIANS

WHEN THE PROCESS HAPPENS IT FORMS IN STAGES

❖ STAGE I

THIS IS WHEN THE CELLS IN THE PROSTATE BECOME ABNORMAL

❖ STAGE II

THE ABNORMAL CELLS & MUTATED DNA CAUSE THE CELL TO GROW RAPIDLY

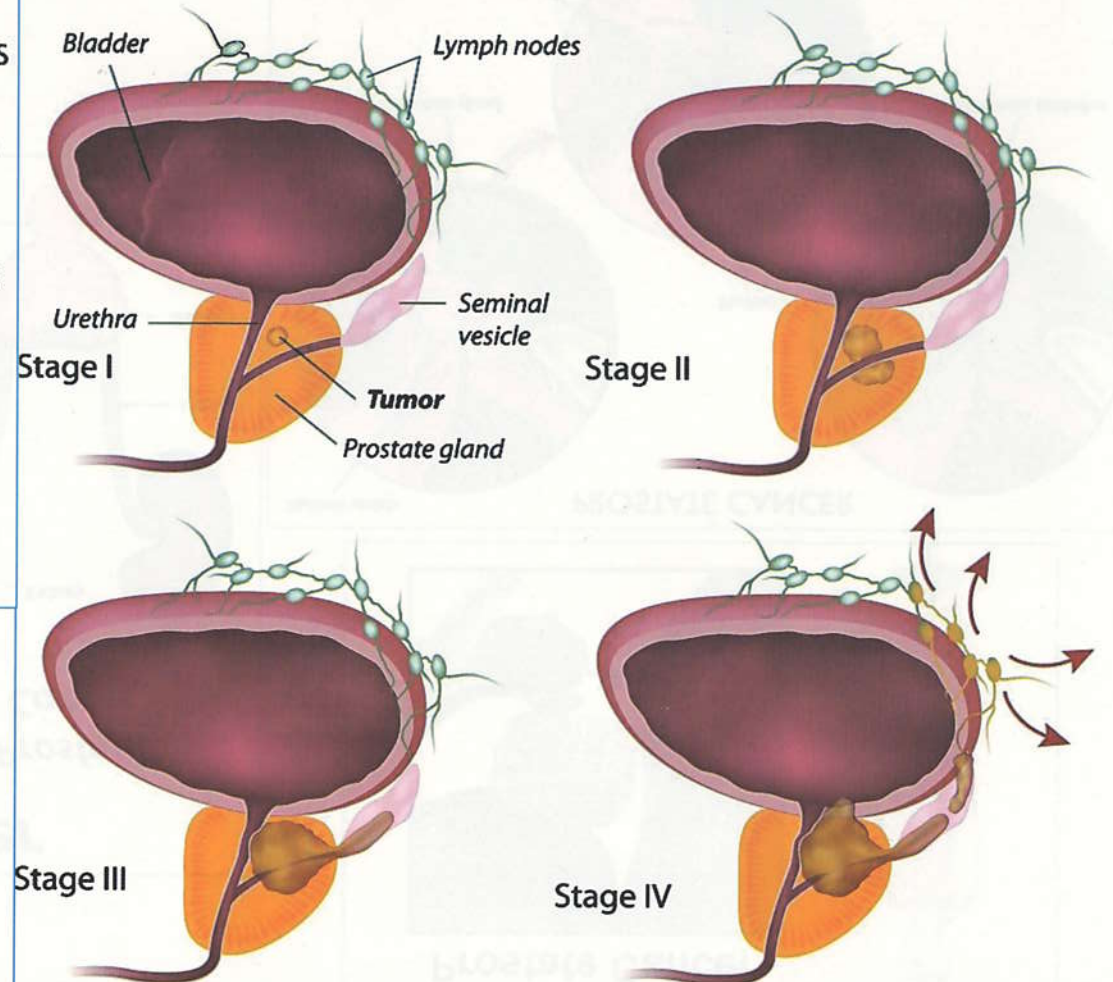
❖ STAGE III

THE CELL SURVIVE & A TUMOR IS FORMED THAT INVADE NEARBY TISSUE

❖ STAGE IV

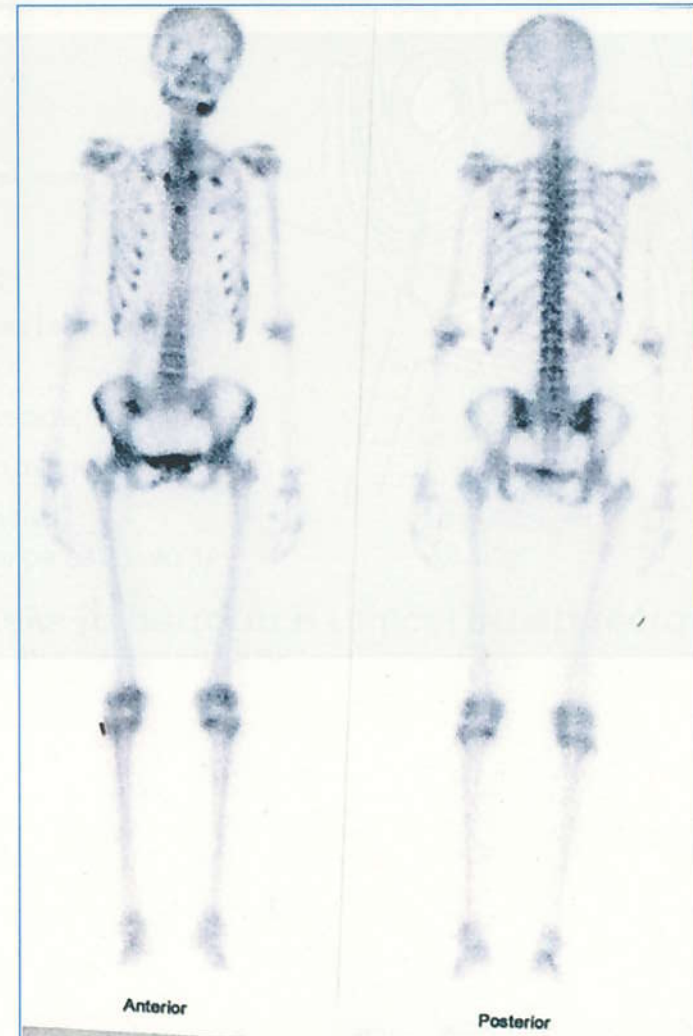
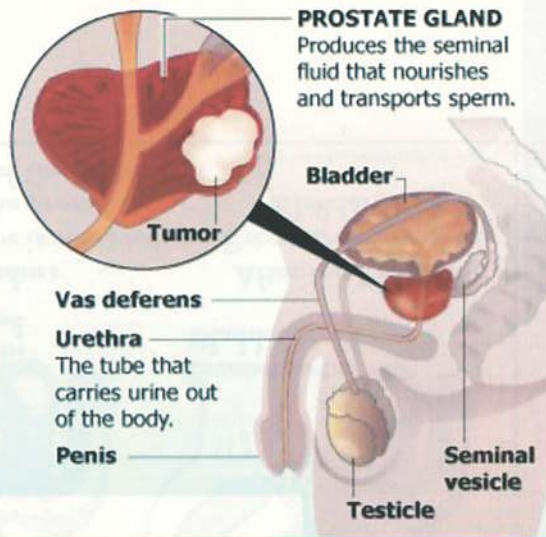
WHEN SOME OF THE ABNORMAL CELLS MIGHT METASTASIZE (MOVE TO OTHER BODY PARTS)

Stages of Prostate Cancer

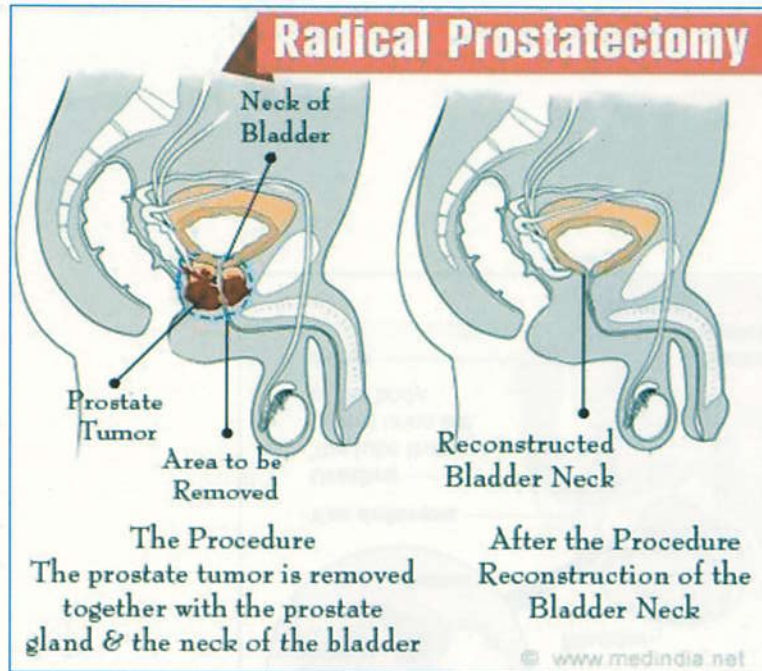


Prostate Cancer

This type of cancer occurs when cells in the prostate gland become abnormal. There are often no early symptoms, but some men have urinary symptoms and discomfort.



Bone scan showing multiple hot spots

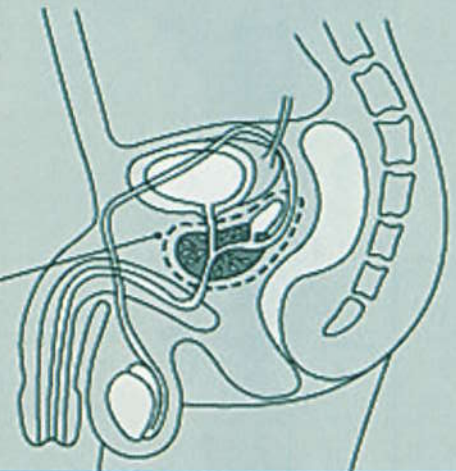


Different ways to perform a radical prostatectomy

The prostate can be removed in three different ways:

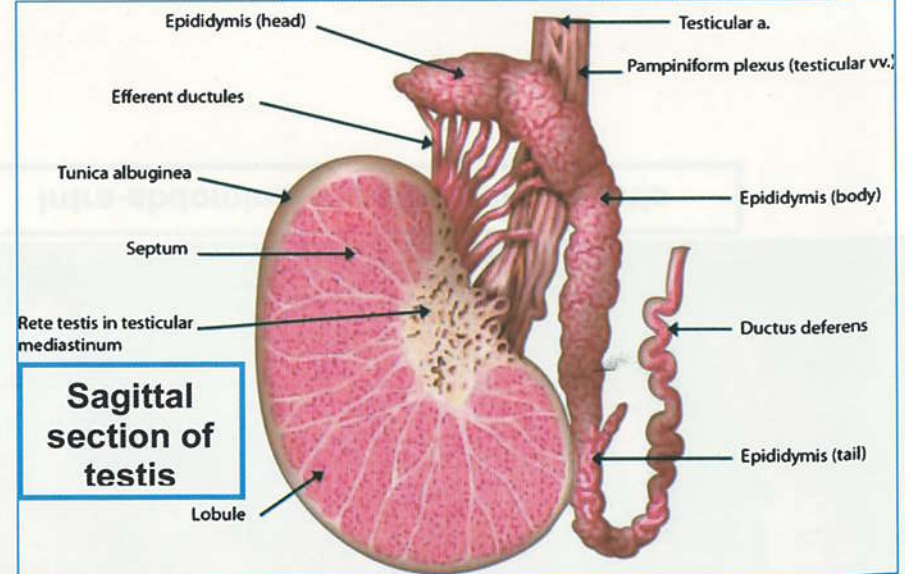
- open radical prostatectomy
- laparoscopic radical prostatectomy
- robotic-assisted radical prostatectomy.

Surgery indicated by dotted line

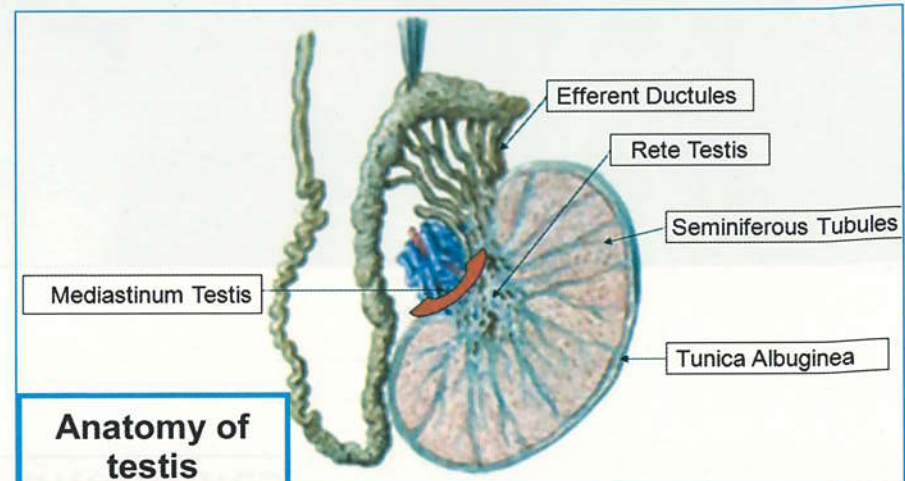


Testis and scrotum

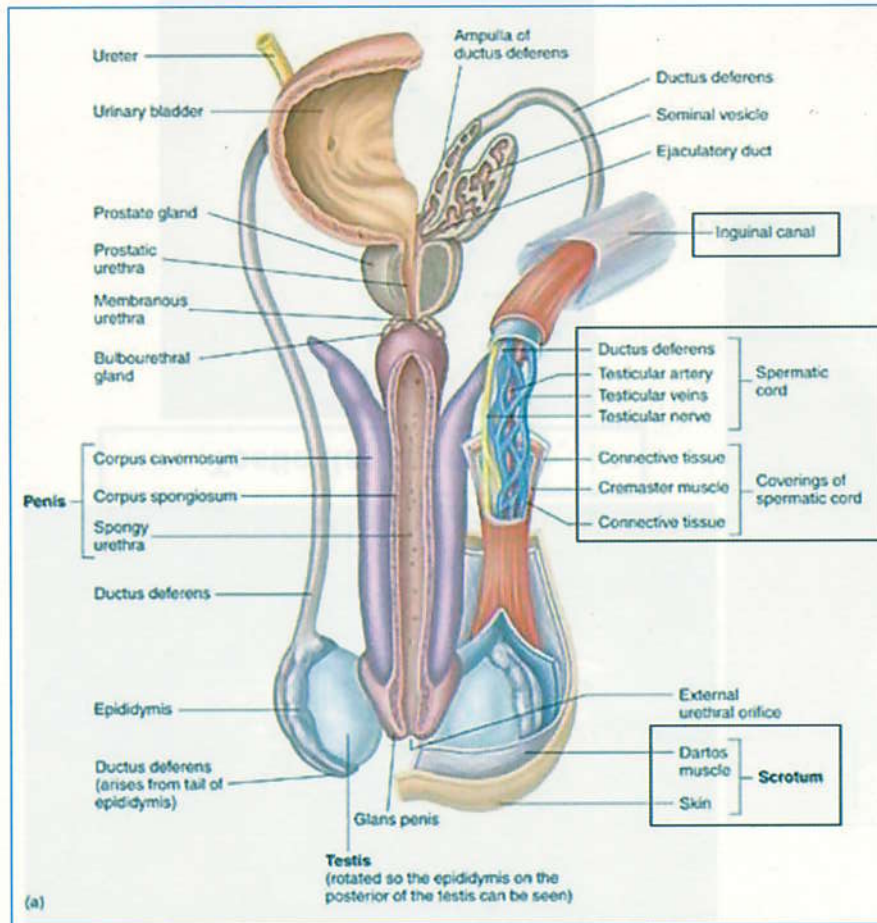
Sagittal section of testis



Sagittal section of testis



Anatomy of testis



Anatomy of spermatic cord

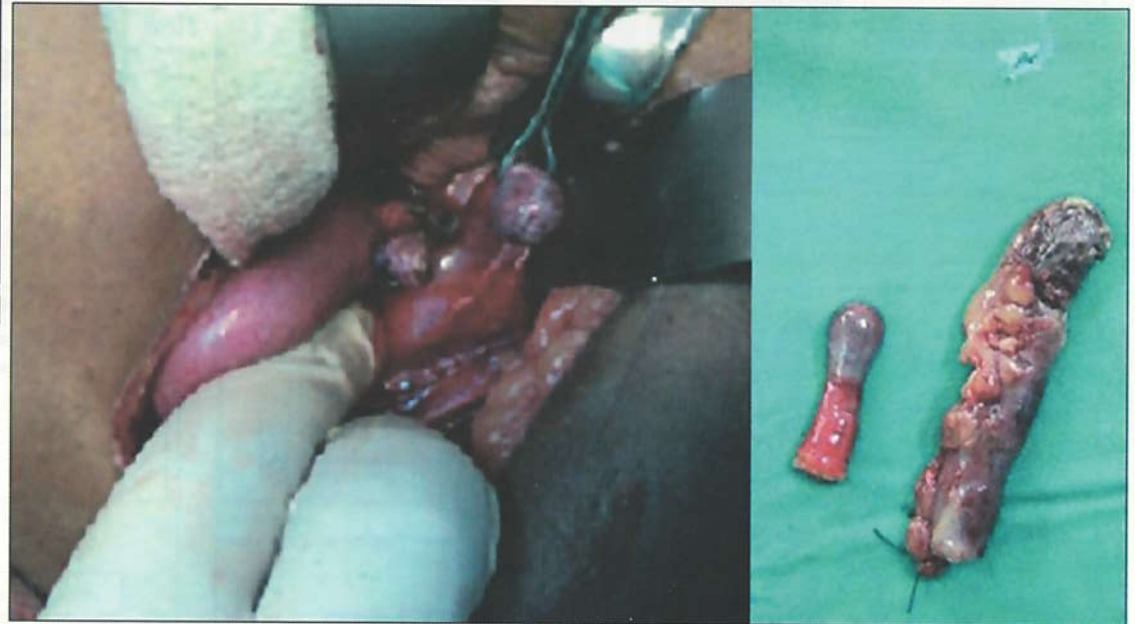
Congenital anomalies



Testicular agenesis



Undescended testis



Intra-abdominal supernumerary testis

Descent of the testis

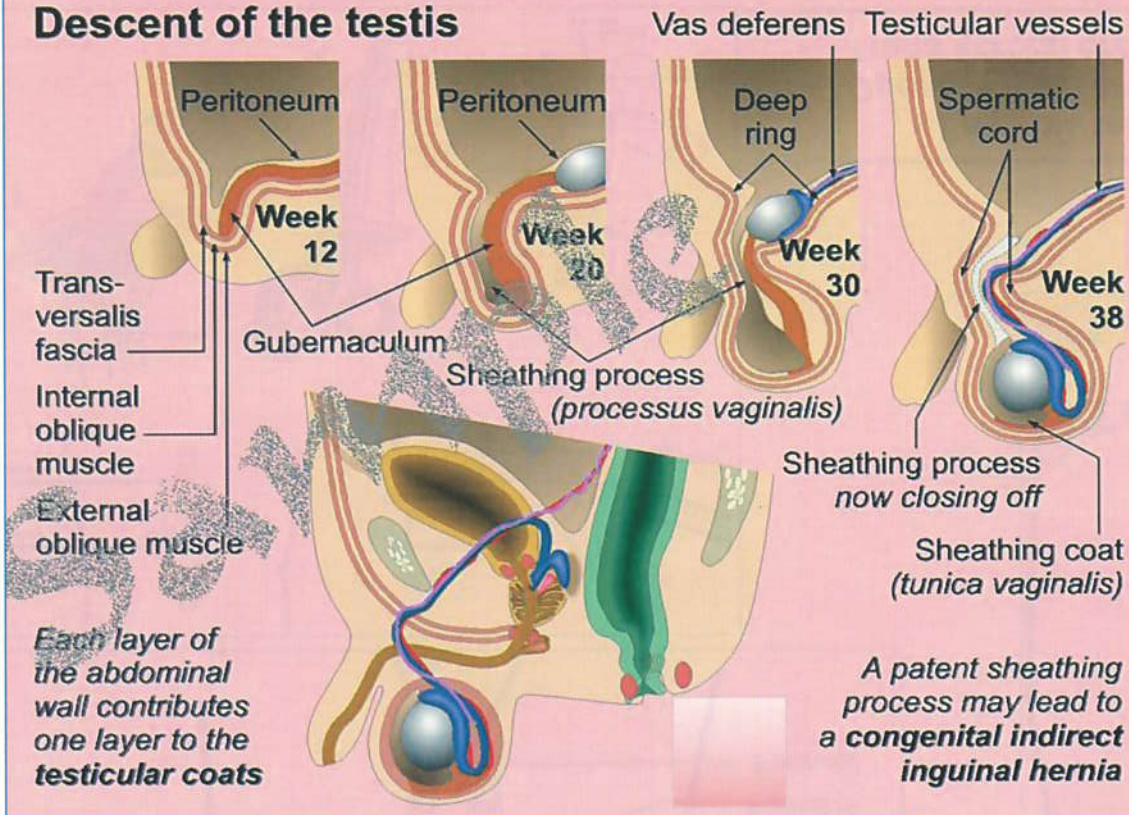
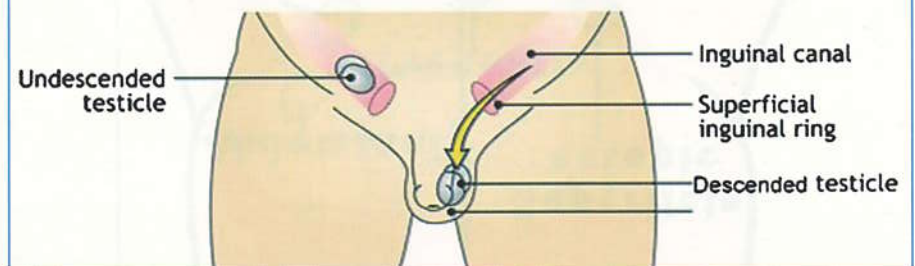
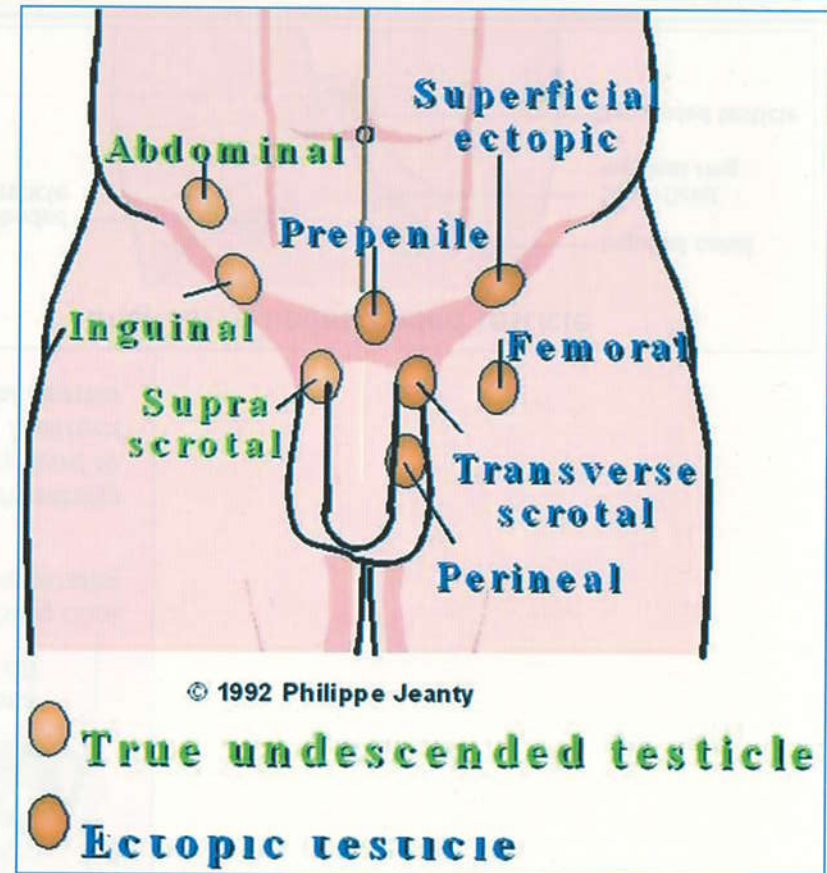
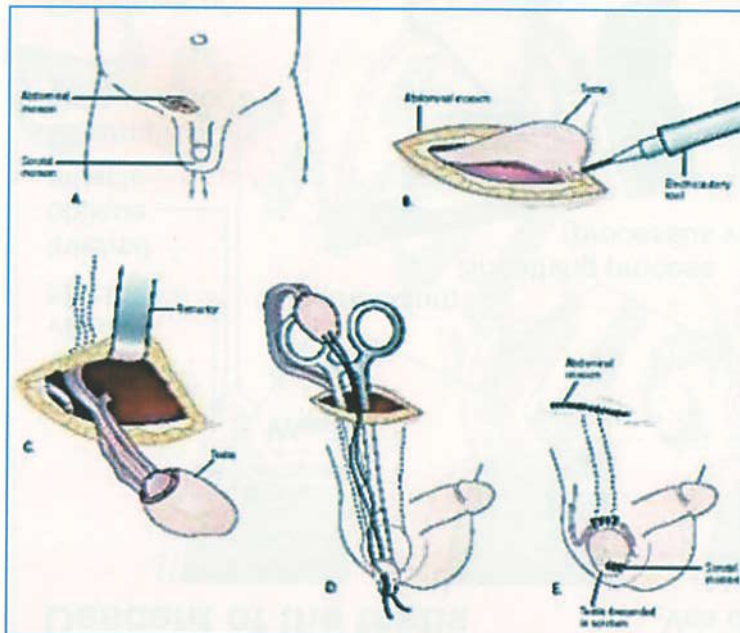
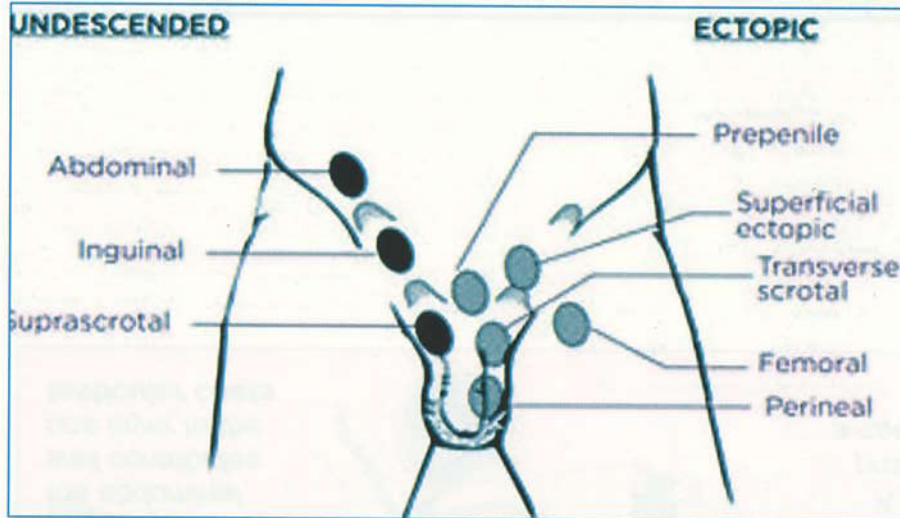


Diagram of undescended testicle





Palpable testis:

- Open inguinal orchidopexy
- Trans scrotal orchidopexy

Comparison between ectopic & undescended testis

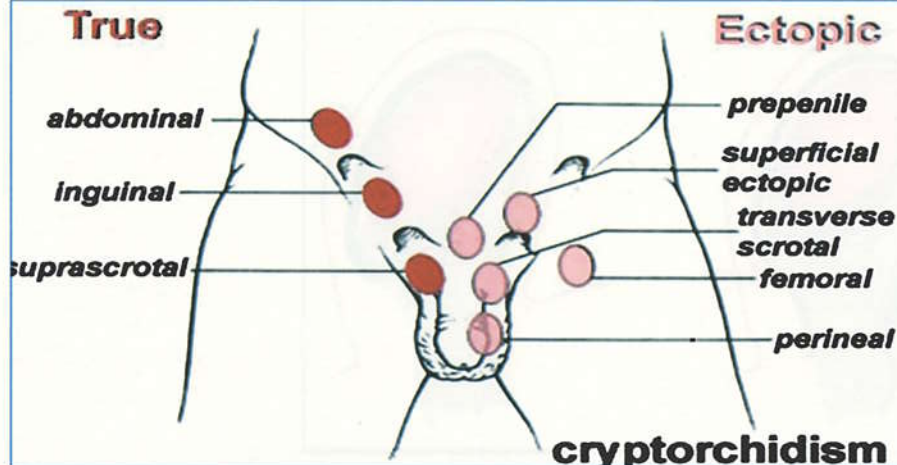
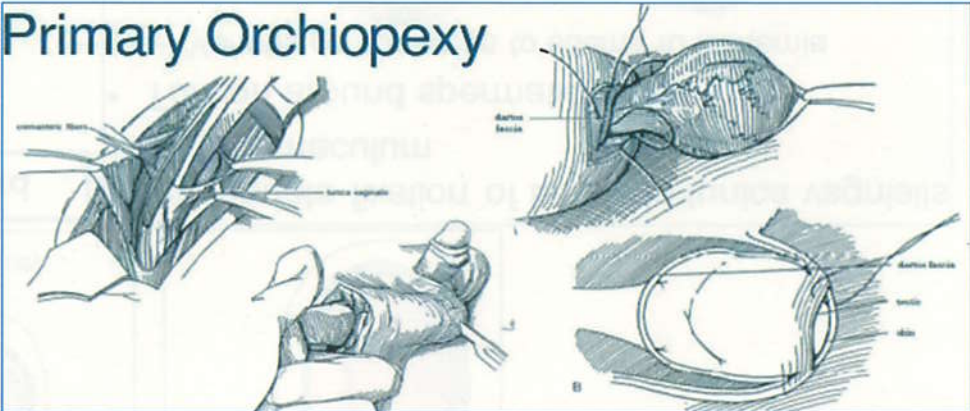
Undescended testis

- The testis is arrested in its normal path of descent
- Usually undeveloped
- Undeveloped & empty scrotum on the affected side
- Shorter length of spermatic cord
- Poor spermatogenesis after 6 yrs
- Usually associated with indirect inguinal hernia
- Treatment: surgery & HT
- Associated with a number of complications

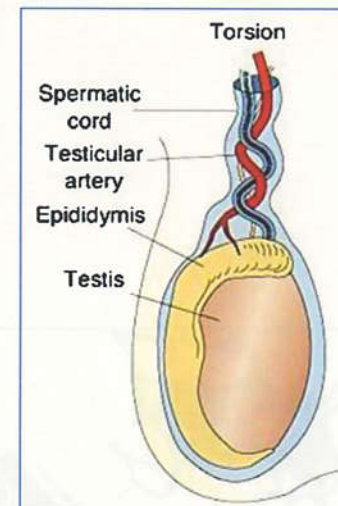
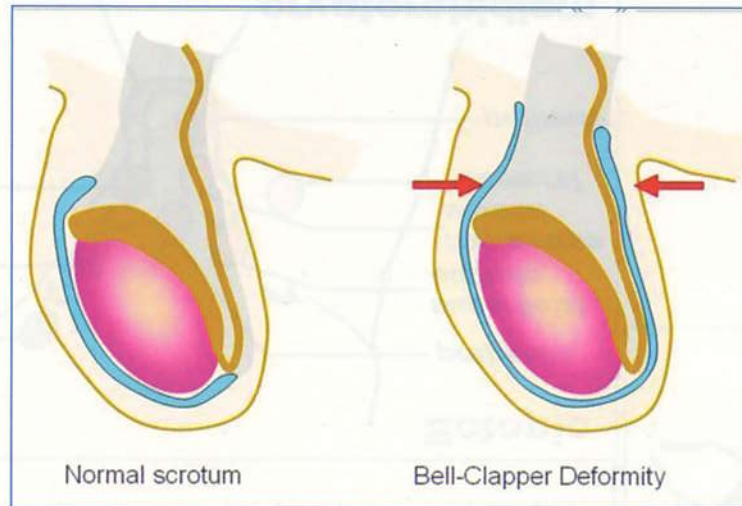
Ectopic testis

- The testis deviates from its normal path of descent
- Fully developed testis
- Empty but usually fully developed scrotum
- Longer length of spermatic cord
- Spermatogenesis is perfect
- Never associated with indirect inguinal hernia
- Treatment: basically surgical
- Complications: liability to injury

Primary Orchiopexy



Torsion

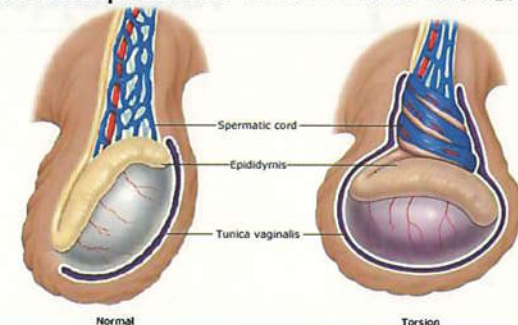


Torsion of the spermatic cord

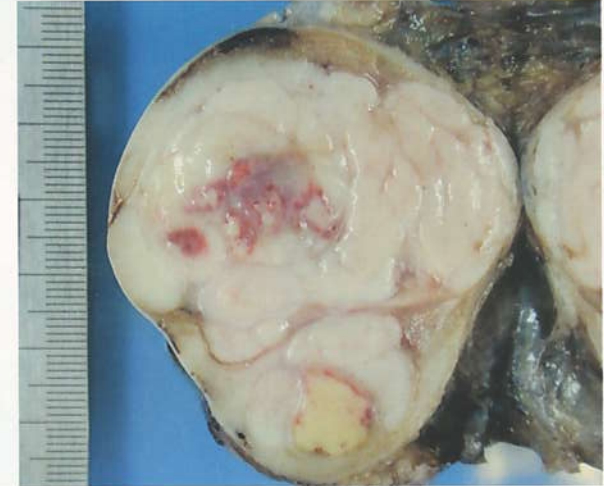
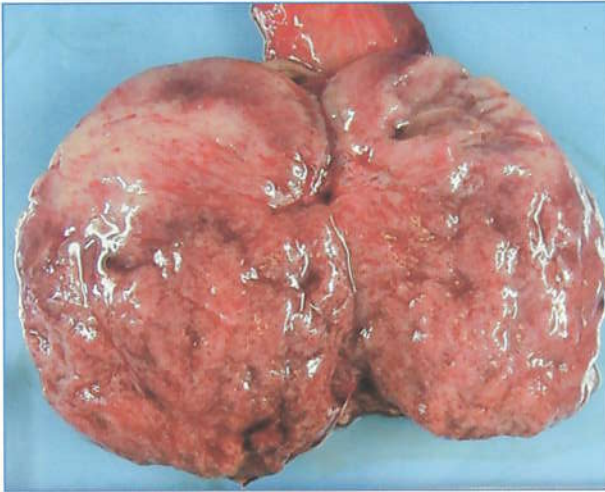
- Inadequate fixation of testes to tunica vaginalis at gubernaculum
- Torsion around spermatic cord
 - Venous compression to edema to ischemia



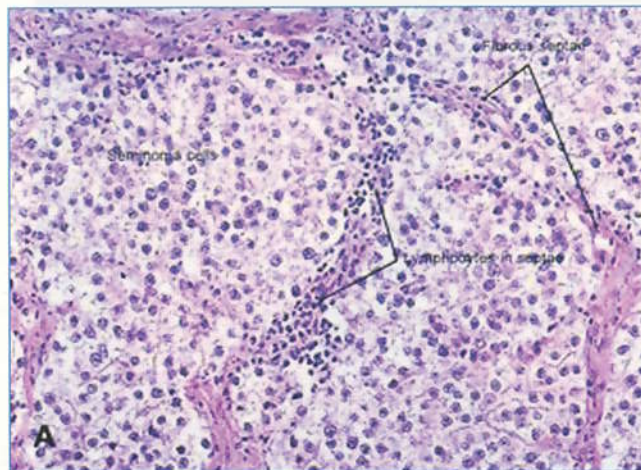
Untwist



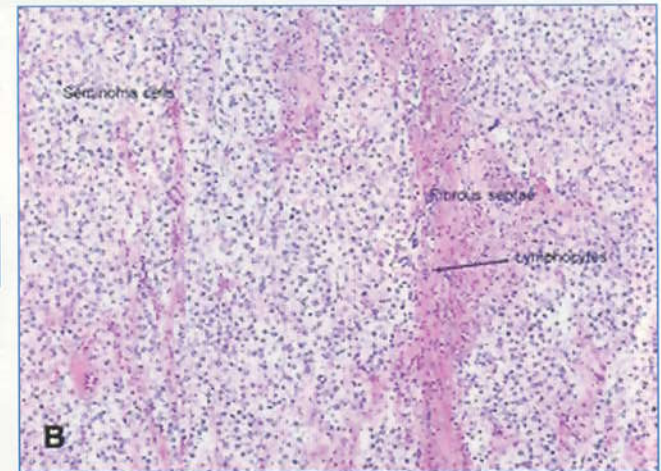
Neoplasms of testis



Seminoma



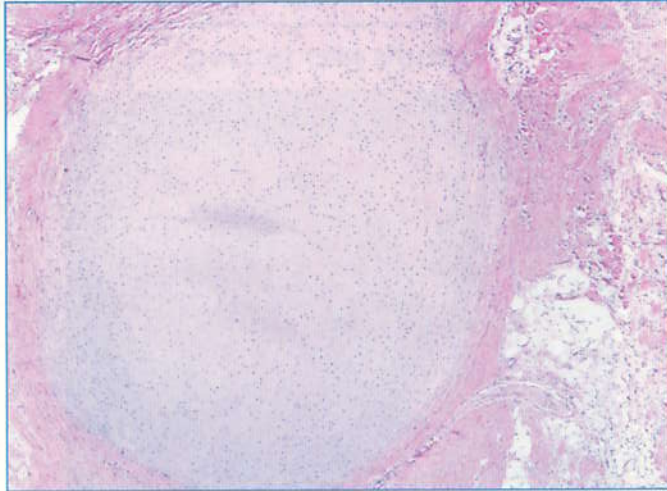
Seminoma (microscopic)



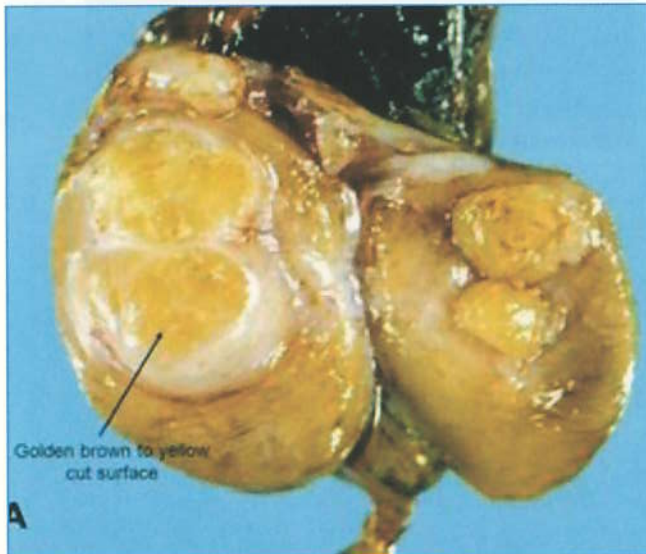
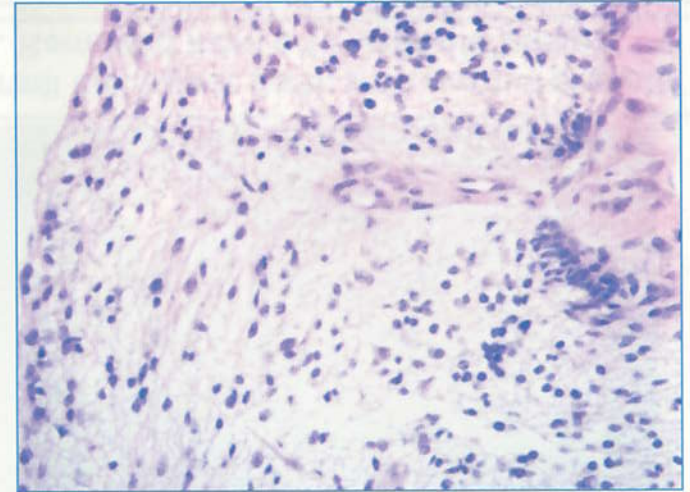


Testicular teratoma



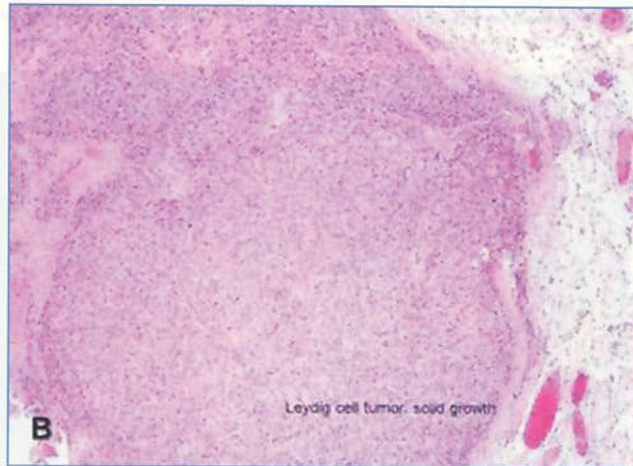


**Testicular teratoma
(microscopic)**

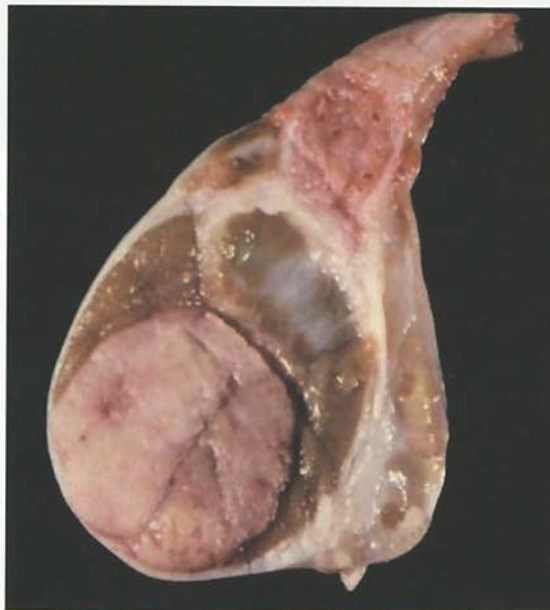
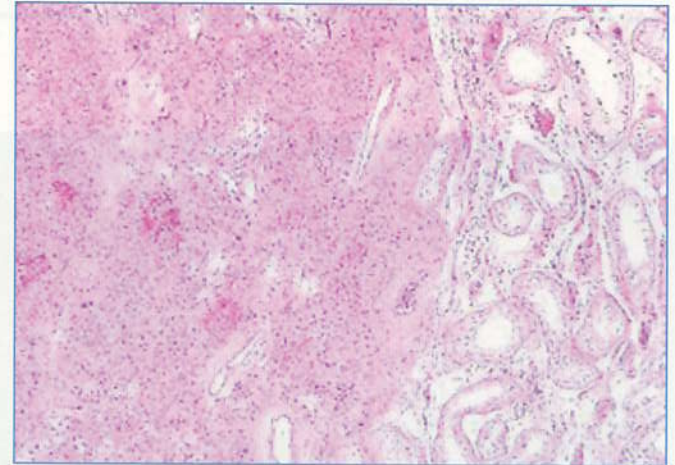


Leydig cell tumor





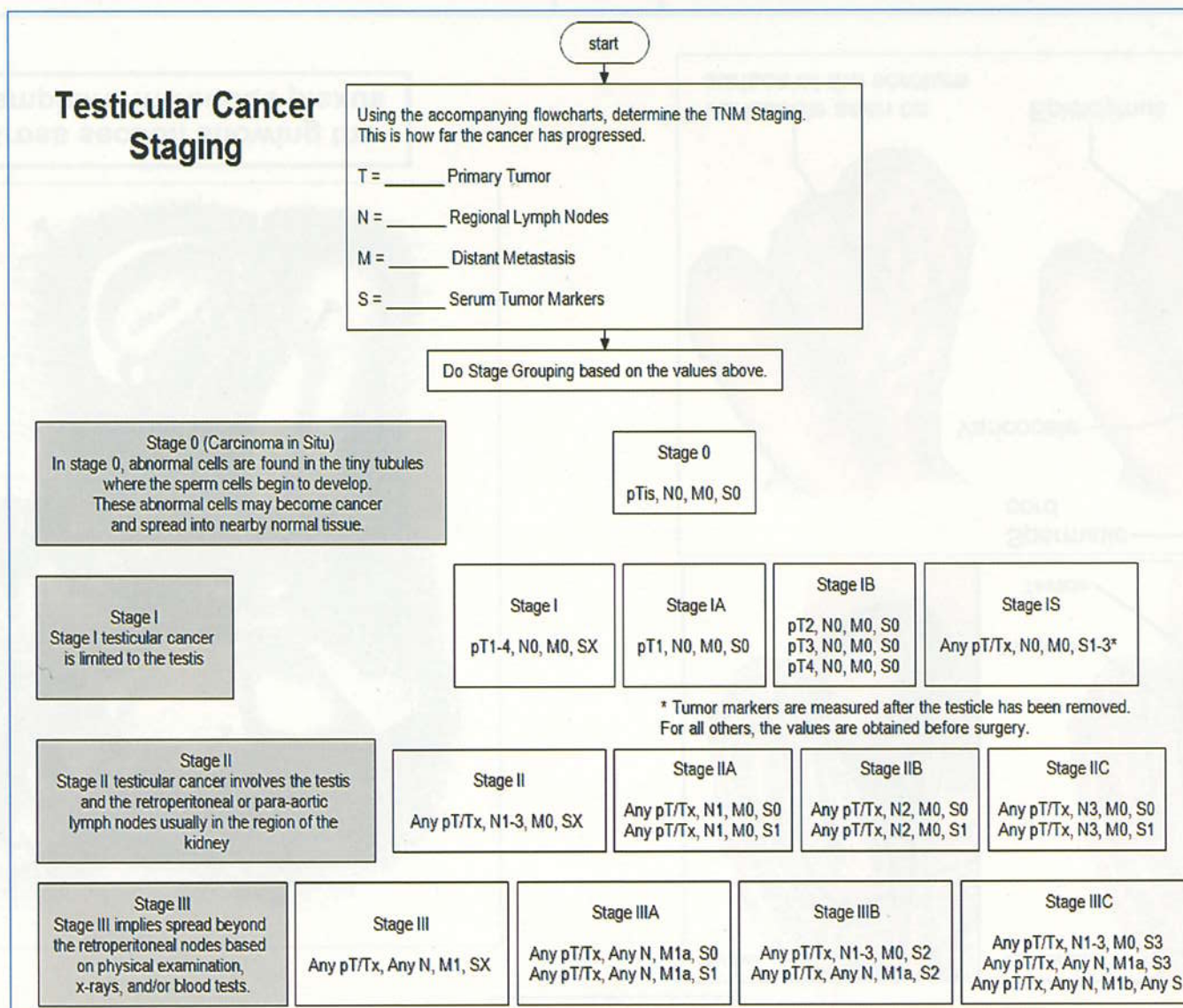
Leydig cell tumor
(microscopic)



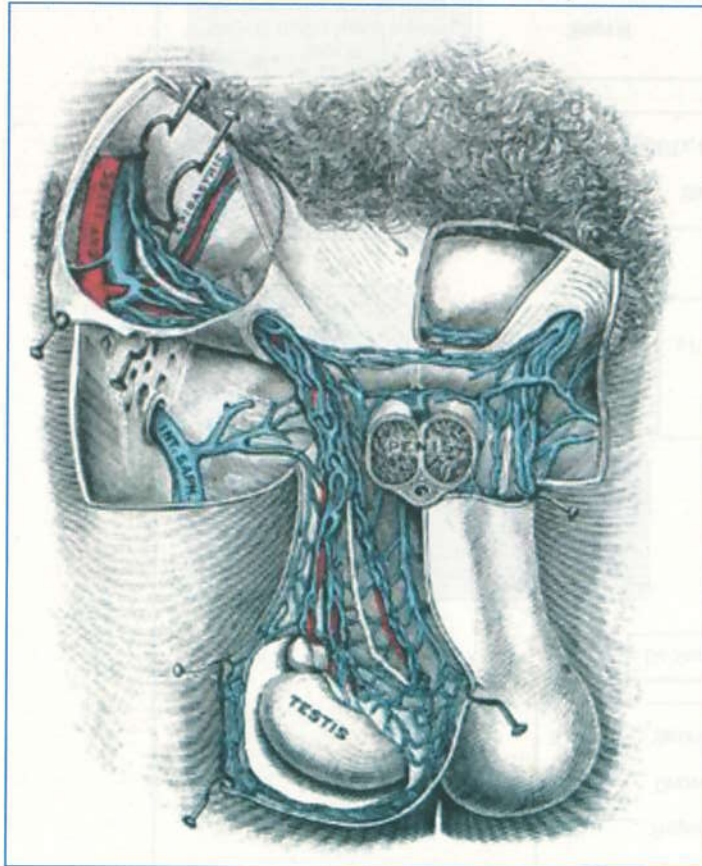
Sertoli cell tumor



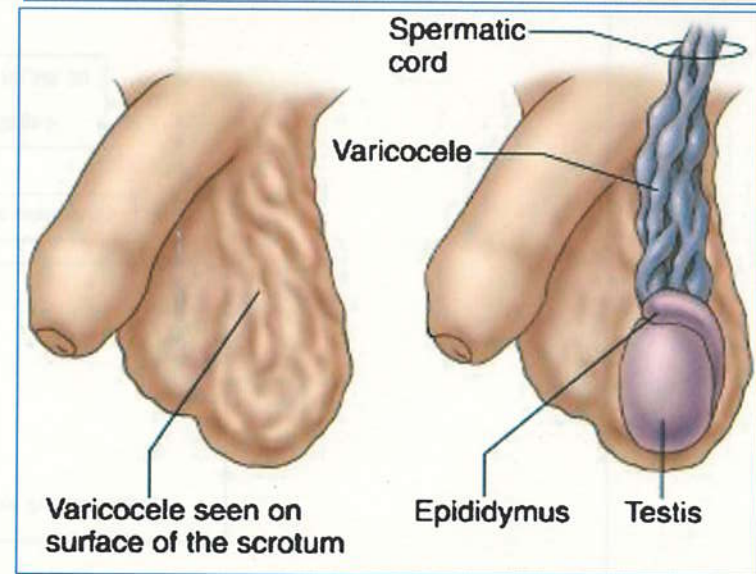
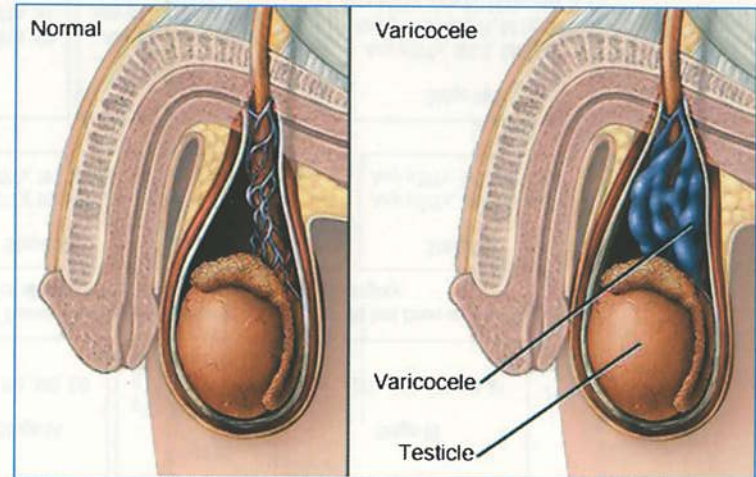
Canine Sertoli cell tumor (left), with normal testicle
on right. Removed from a 13-year-old beagle.



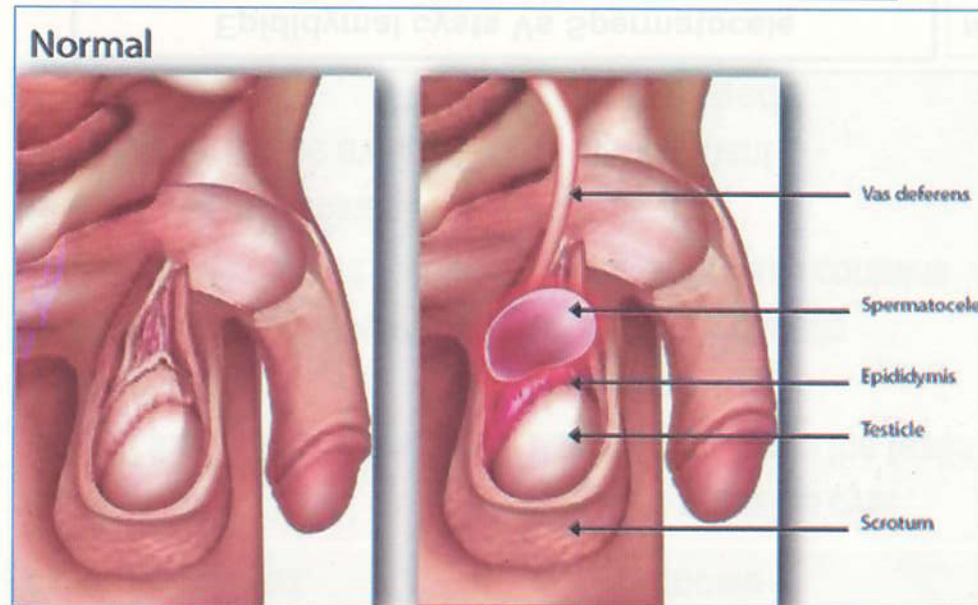
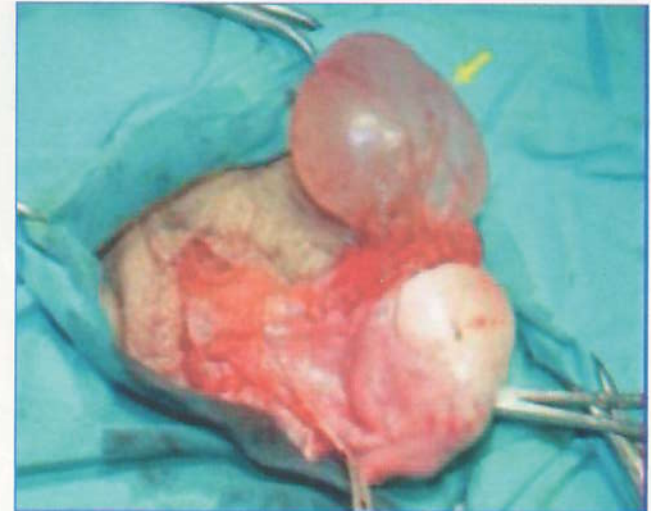
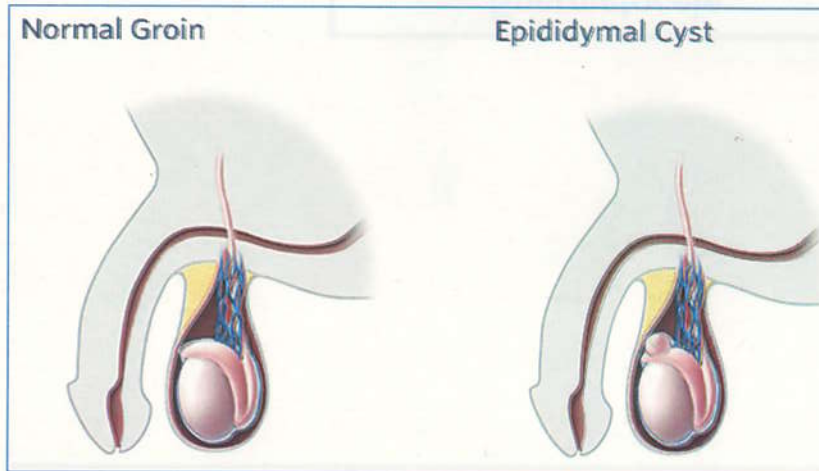
Varicocele



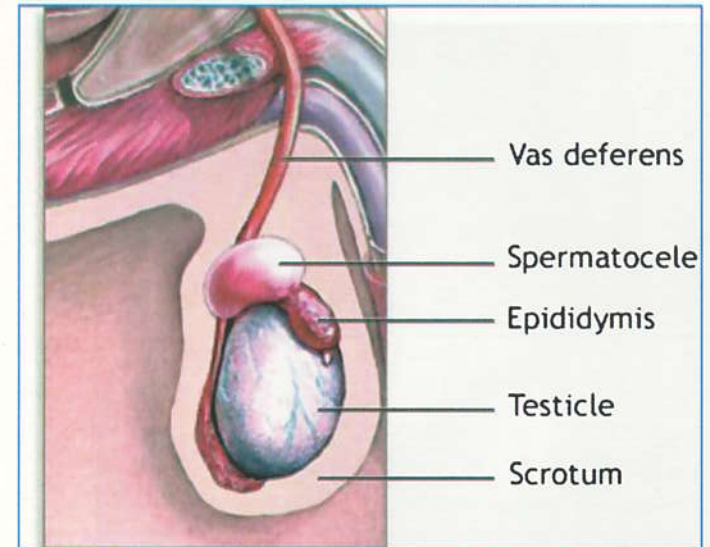
Cross section showing the pampiniform venous plexus



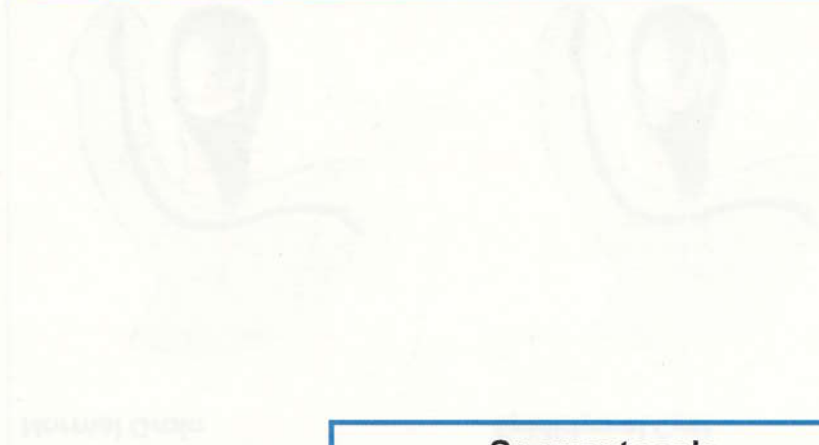
Epidualymal cyst & spermatocele



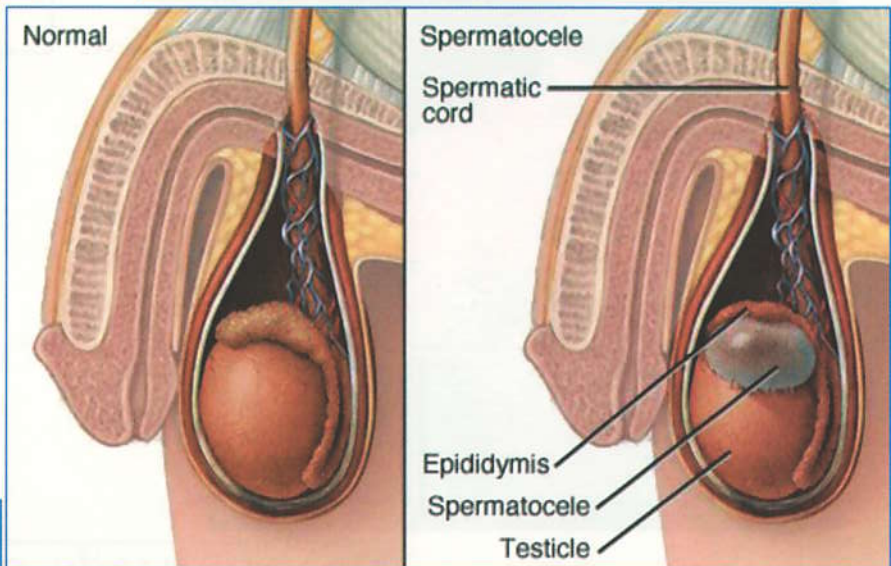
Epididymal cyst	Spermatocele
Congenital	Acquired retention cyst
Behind the body of the testis	Behind and above the testis
Multilocular	Unilocular
Bunch of grapes appearance	Looks like 3rd testis
Clear fluid as content	Barley water fluid contains sperms
Brilliantly transilluminant	Transilluminant
Excision should be avoided in young	Can be excised



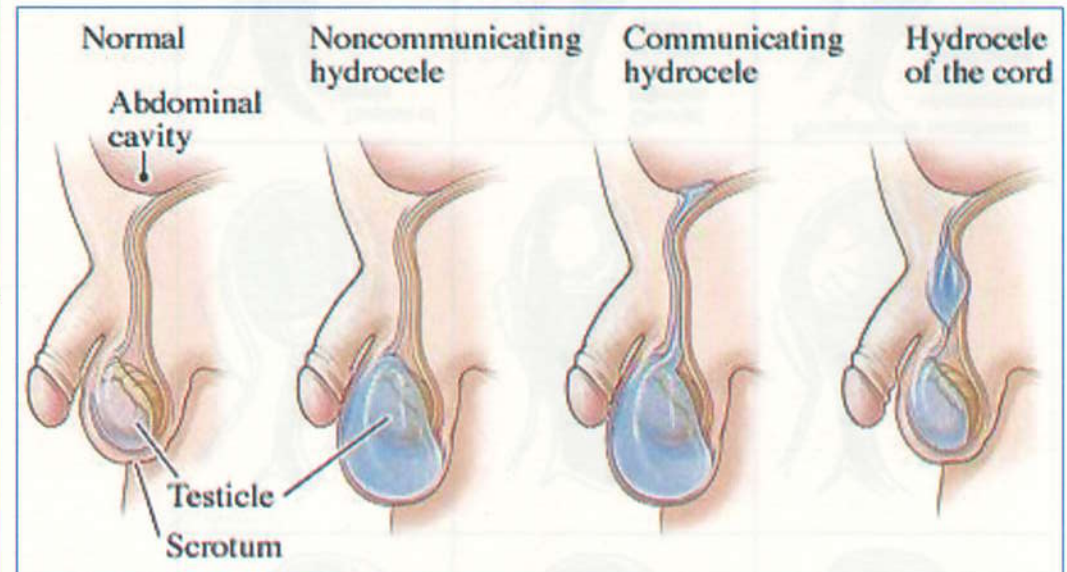
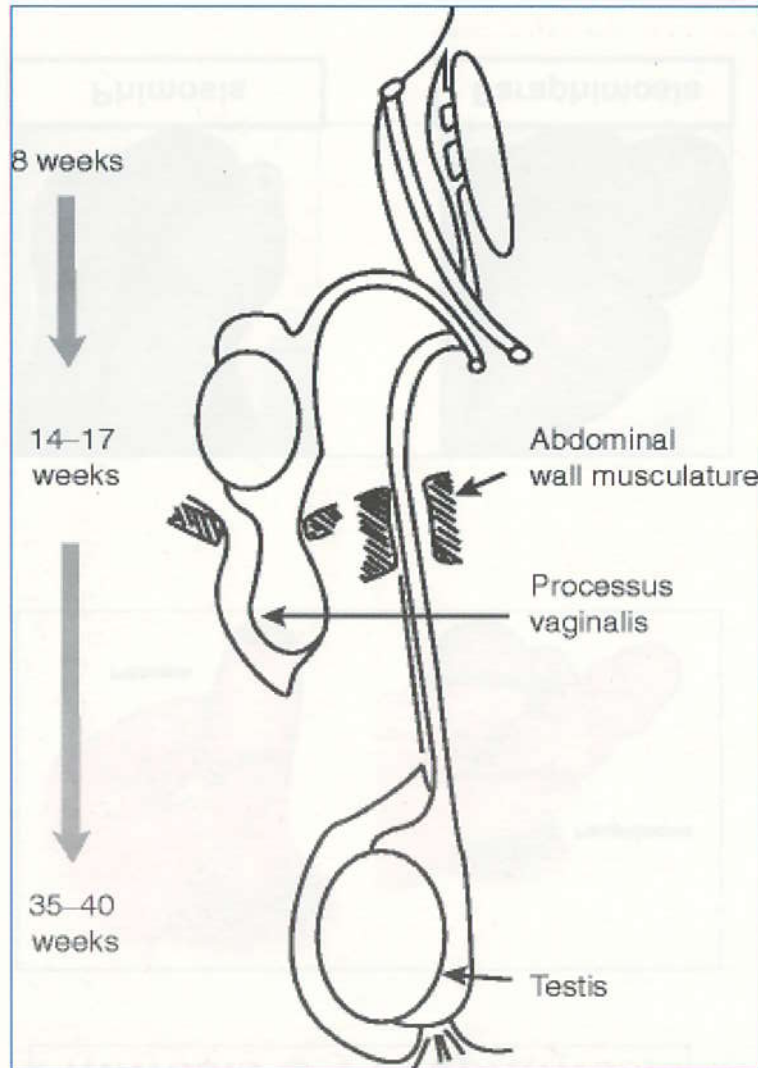
Epididymal cysts Vs Spermatocele



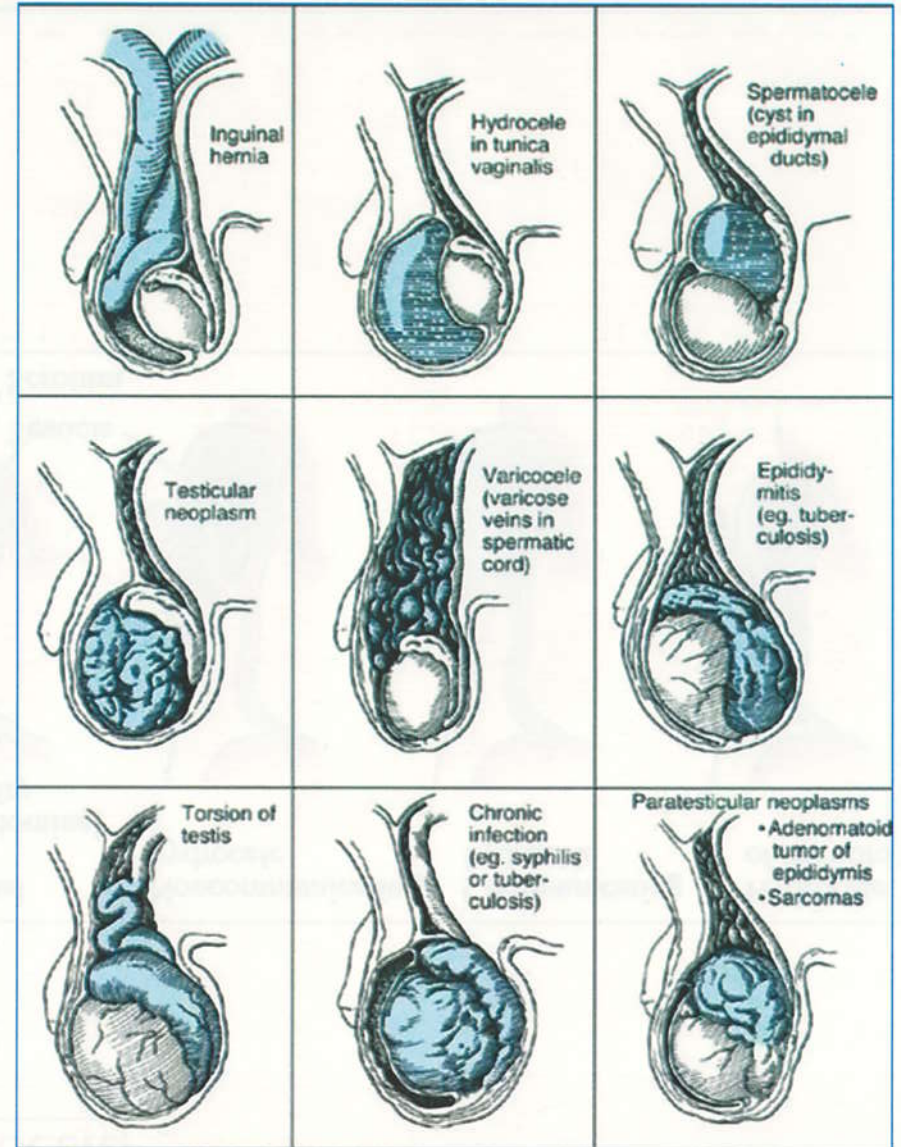
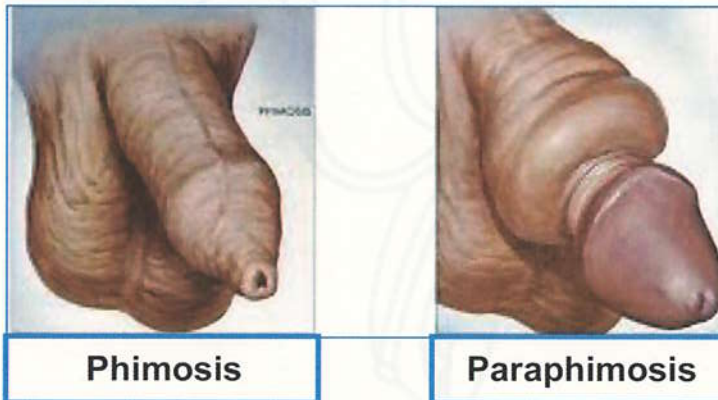
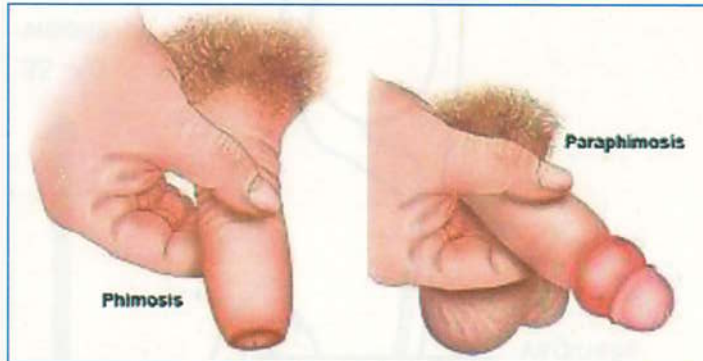
Spermatocele



Hydrocele

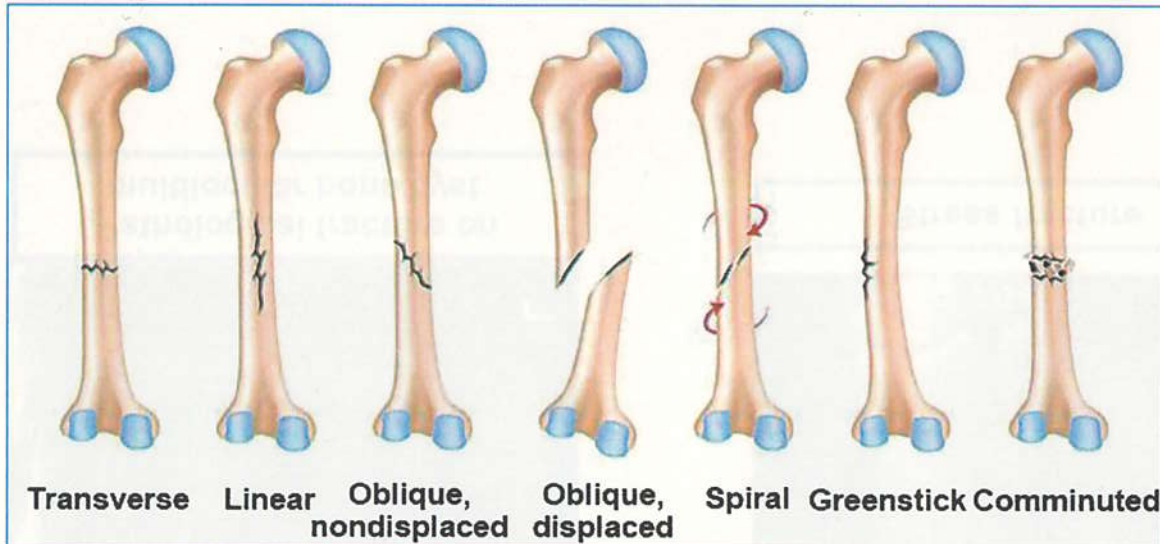


Phimosis & Paraphimosis

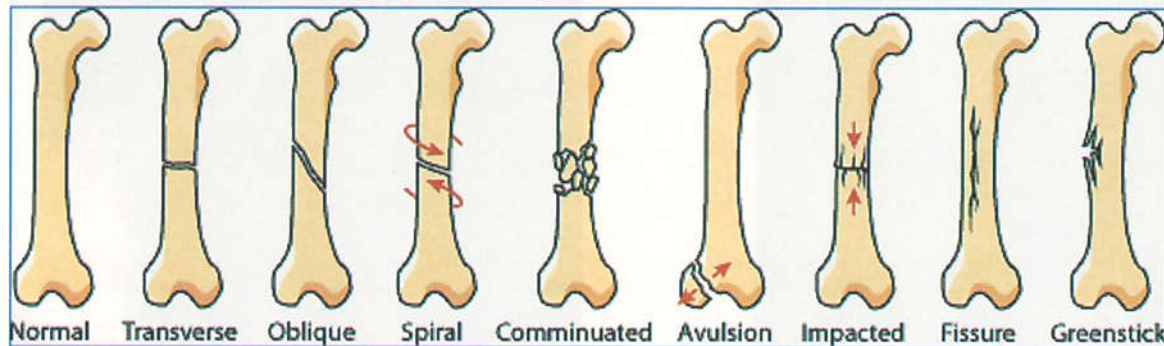


Orthopedic Surgery

General orthopedics



Types of bone fractures





Pathological fracture on
multilocular bone cyst



Stress fracture



Stress fracture
of metatarsal bone

- **Delayed Union**

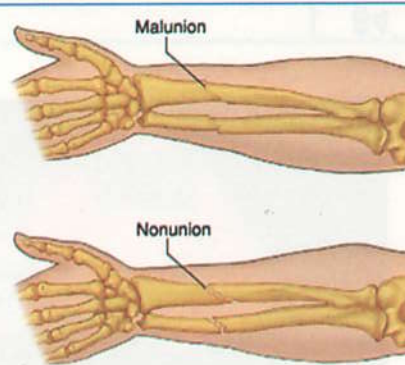
- Healing of the bone does not occur at normal rate

- **Nonunion**

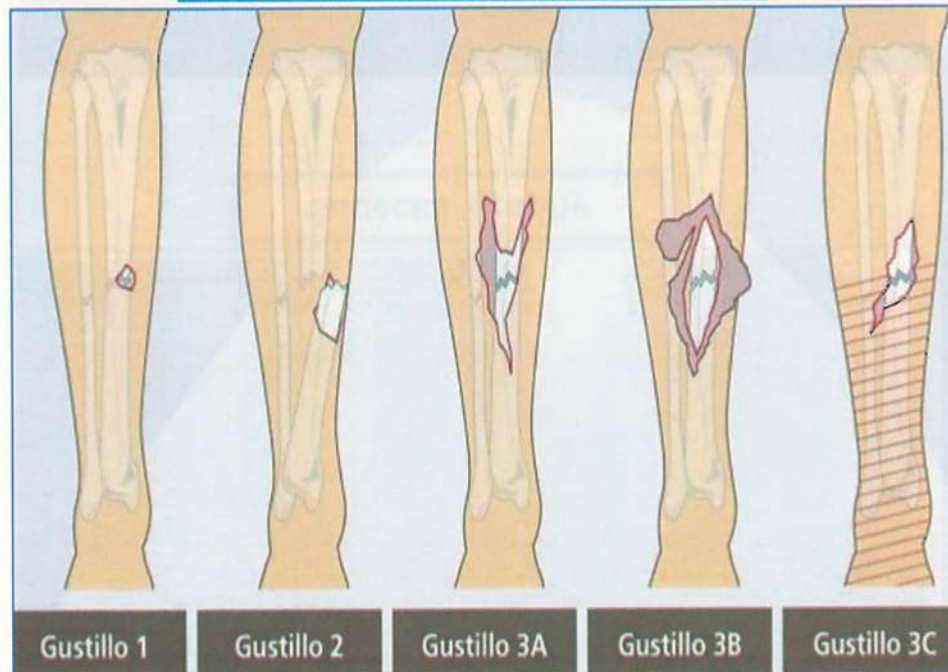
- Failure of the ends of the fractured bone to unite

- **Malunion**

- Failure of ends of fractured bone to unite in in normal alignment



Delayed complications



Gustilo classification of open fractures



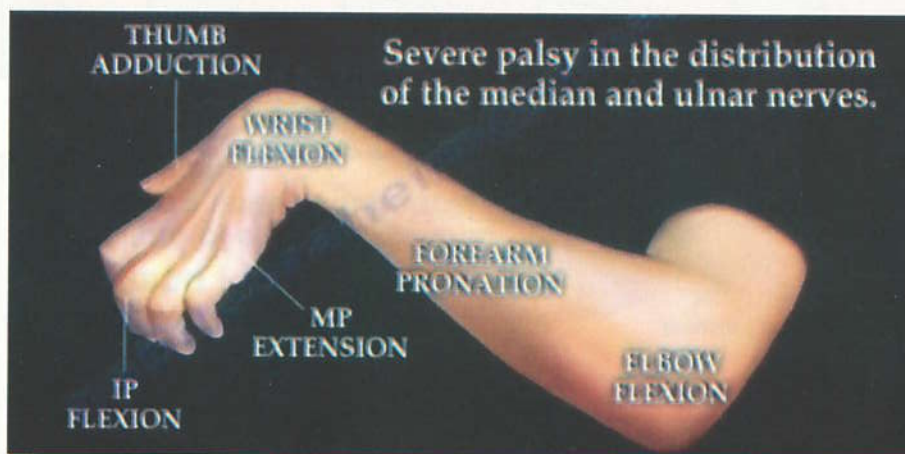


Sudek's atrophy



Myositis ossificans

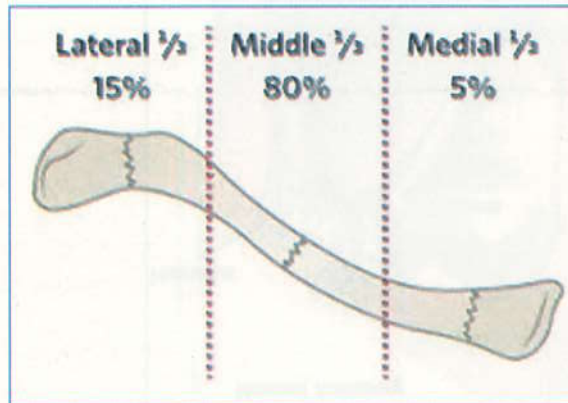
Myositis Ossificans



Volkman's Ischemic contracture



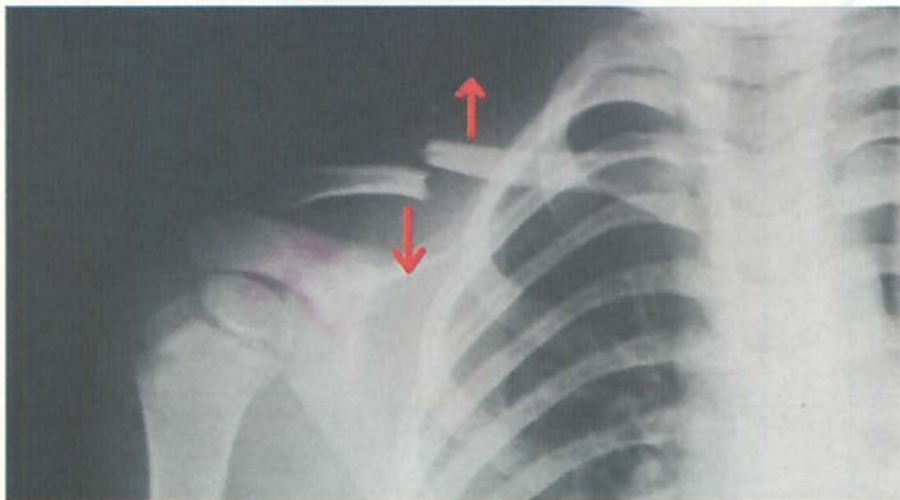
Upper limb fractures

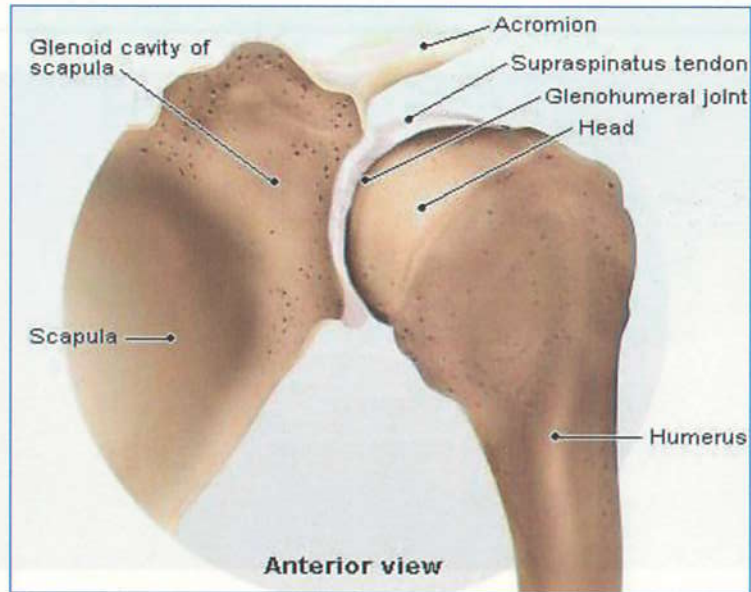


Fracture clavicle



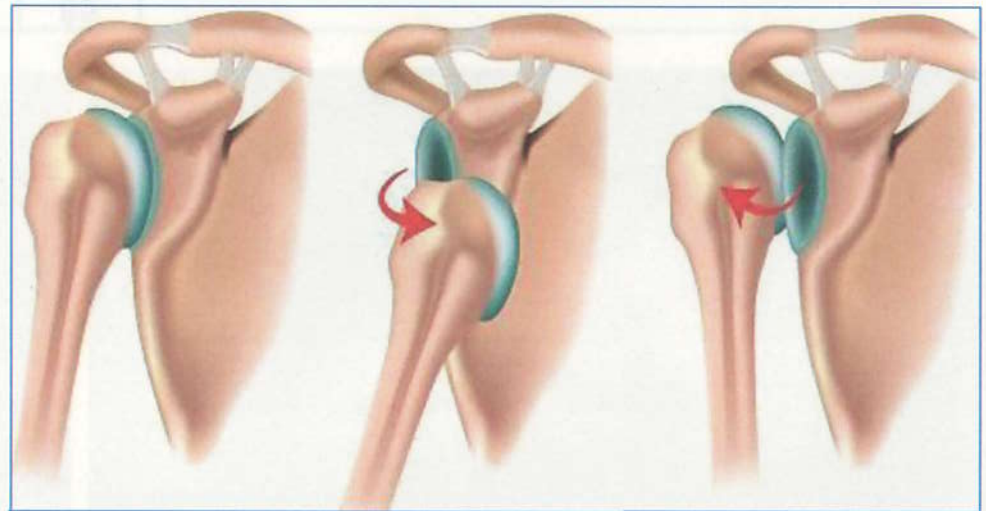
Broad arm sling for fracture clavicle





Anterior view

Shoulder joint

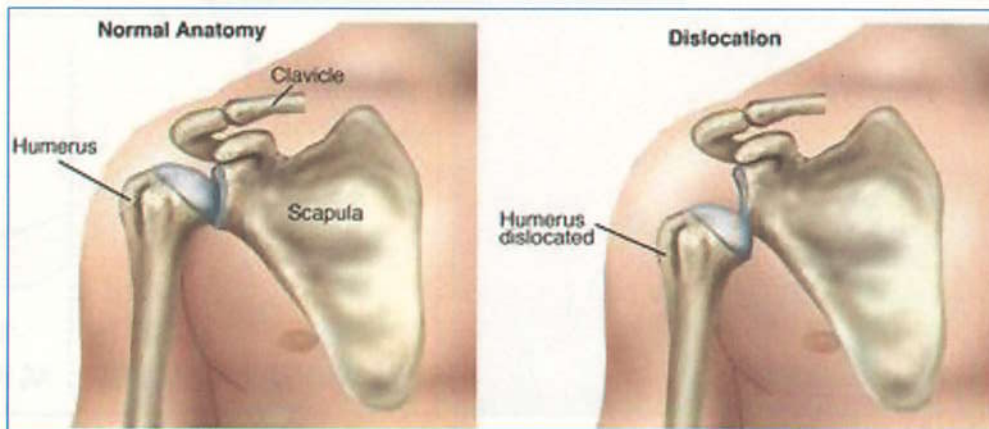


Normal anatomy

Anterior dislocation

Posterior dislocation

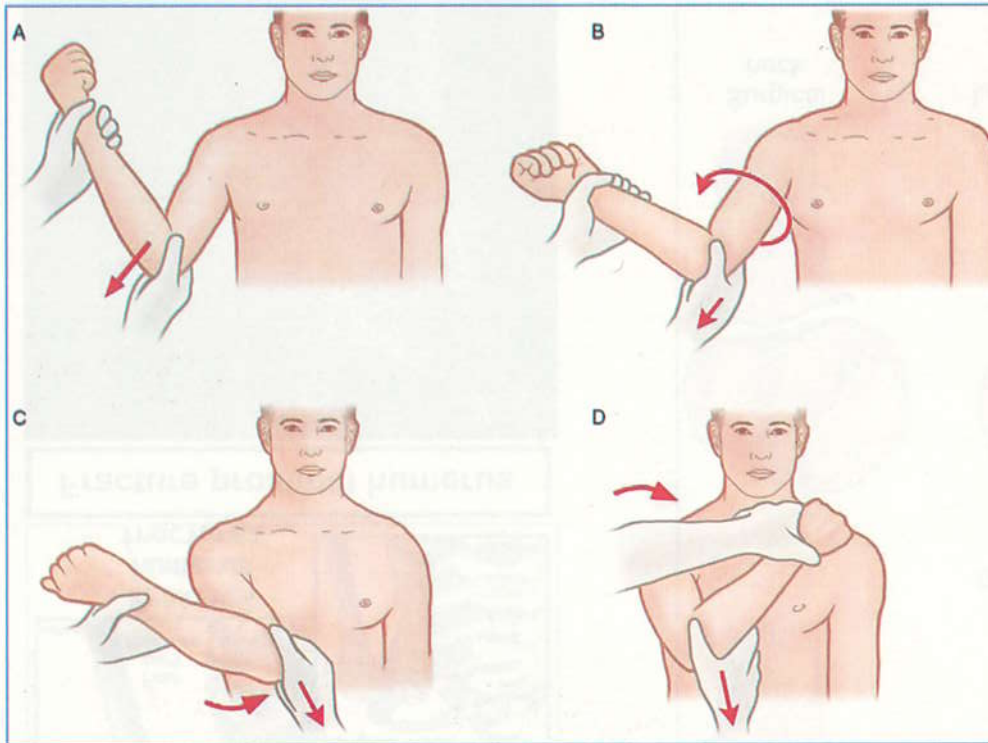
Shoulder dislocation



Normal Anatomy

Dislocation

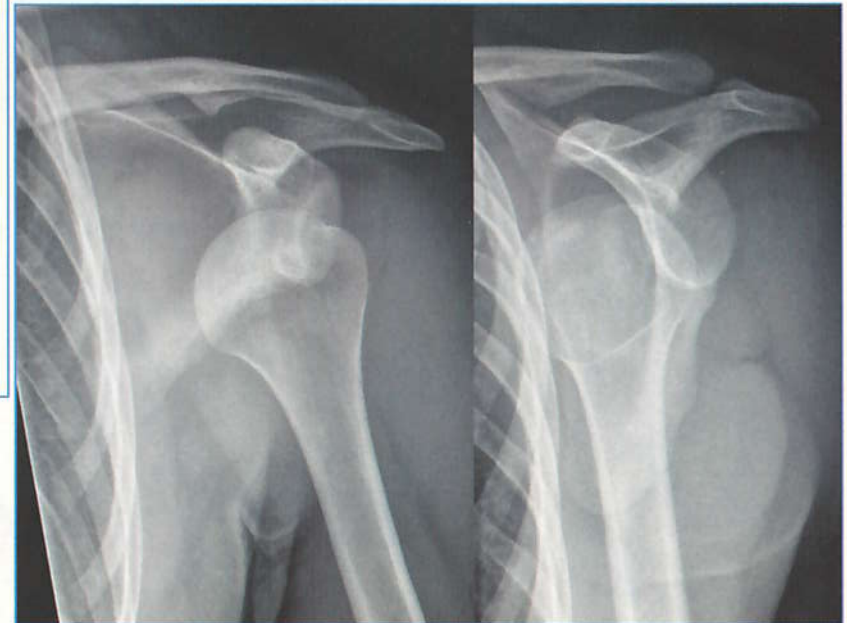
Shoulder dislocation

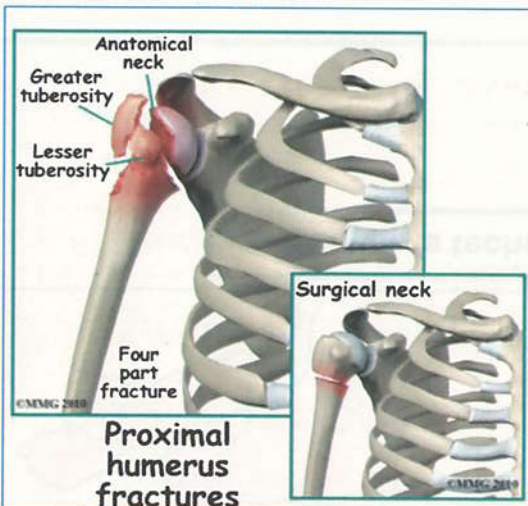


Kocher 's technique

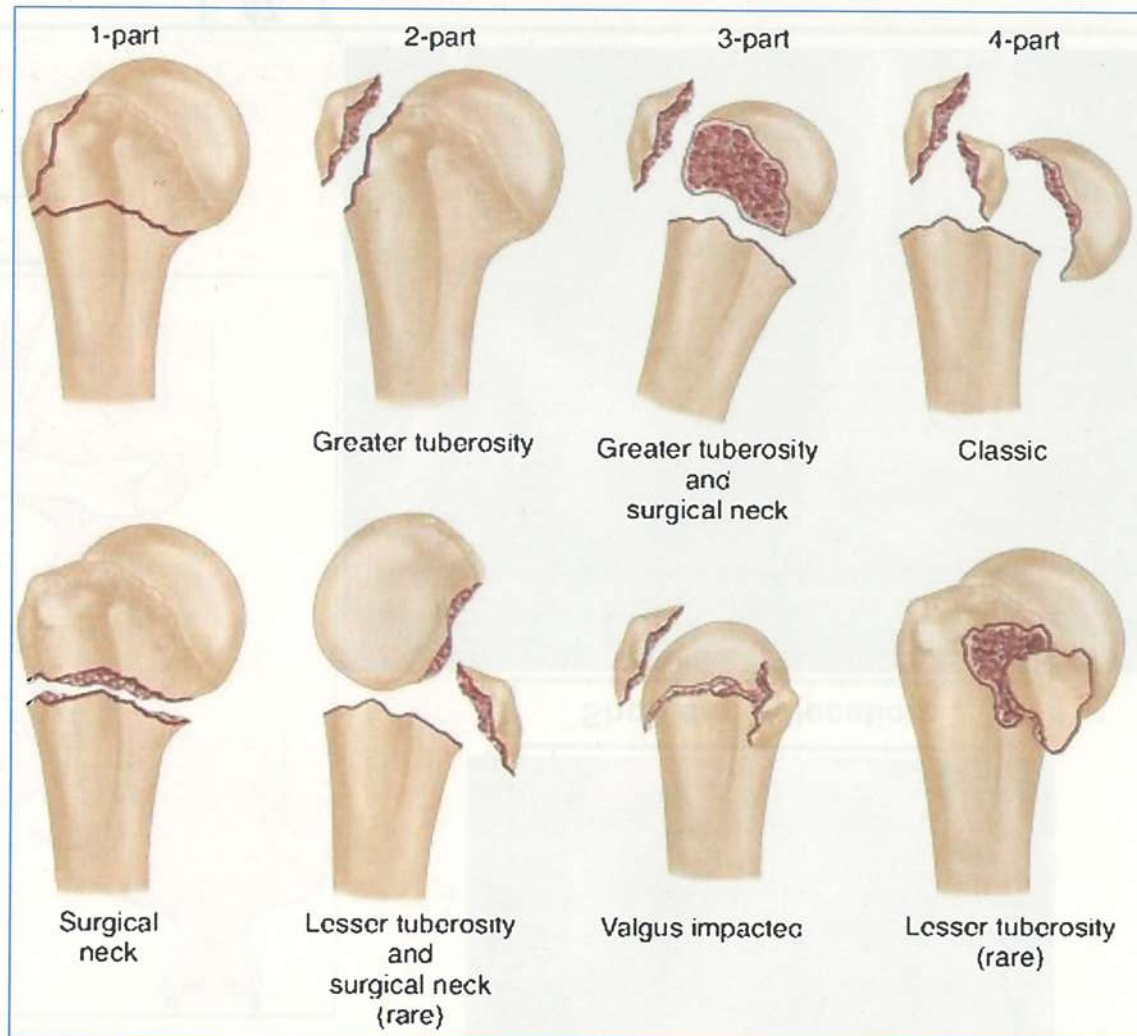


Shoulder dislocation





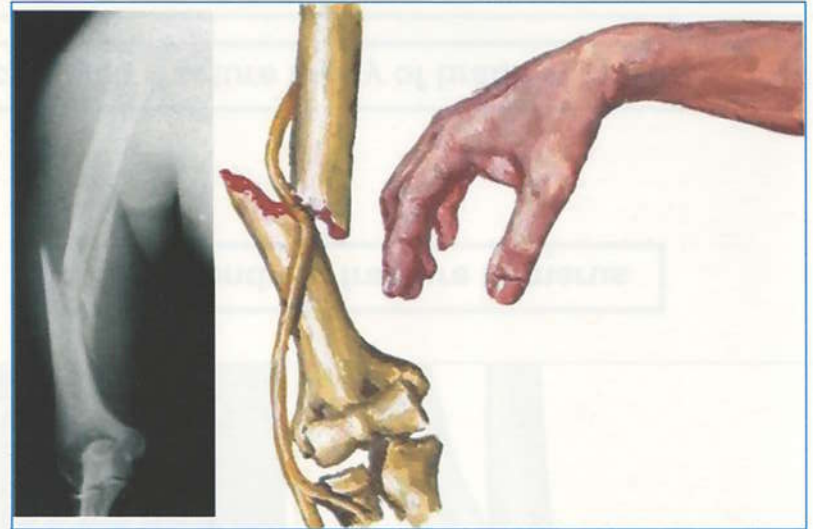
Fracture proximal humerus



Classification of proximal humerus fractures



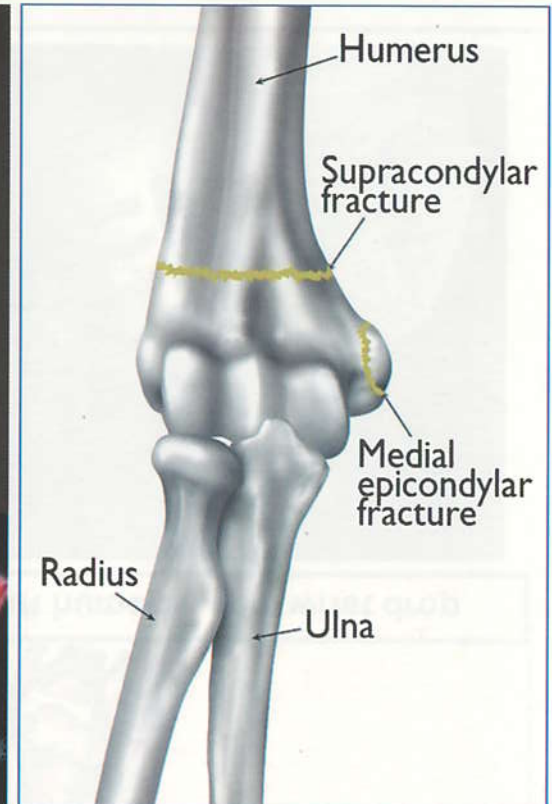
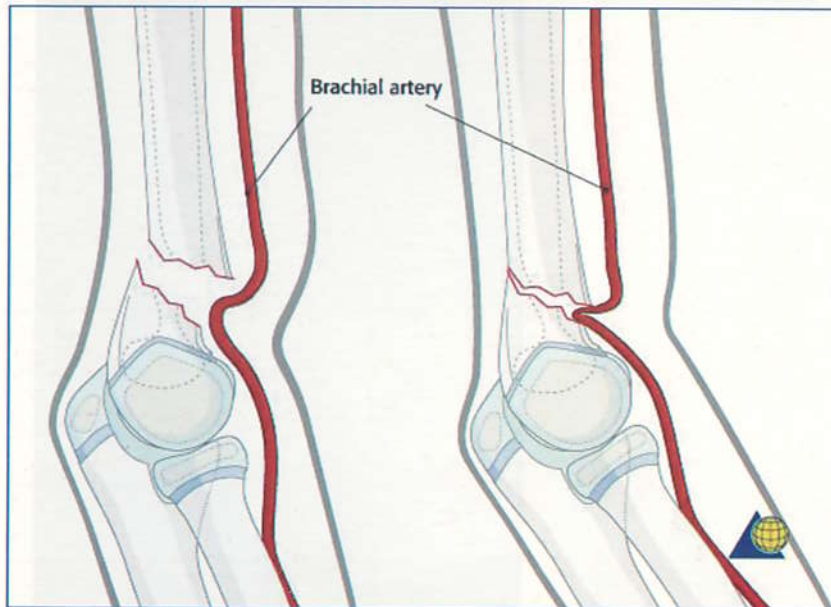
Fracture shaft humerus



Fracture shaft humerus with wrist drop



Plaster slap for fracture humerus



Supracondylar fracture humerus

Supracondylar fracture injury of brachial artery



Posterior elbow dislocation



Fracture radius and ulna

Upper Extremity Trauma

Part 3: Elbow & Forearm

Monteggia

vs

Galeazzi

Anatomy
Radiographs
FOPH

BBFF

Monteggia

● Galeazzi

Essex-Lop.

Fat Pads

Peds Elbow

Supracond.

Lat. condyle

Med. epicon.

48



Fracture:

➤ Proximal

✓ Ulna

Dislocation:

➤ Proximal

✓ Rad-Cap

“MU/GR”

“I was attacked by a MUGGER”

Monteggia = Ulna fx

MU Proximal ½ =
Fx & Disloc are
Proximal

Galeazzi = Radius fx

GR Distal ½ =
Fx & Disloc are
Distal

Fracture:

➤ Distal

✓ Radius

Dislocation:

➤ Distal

✓ DRUJ



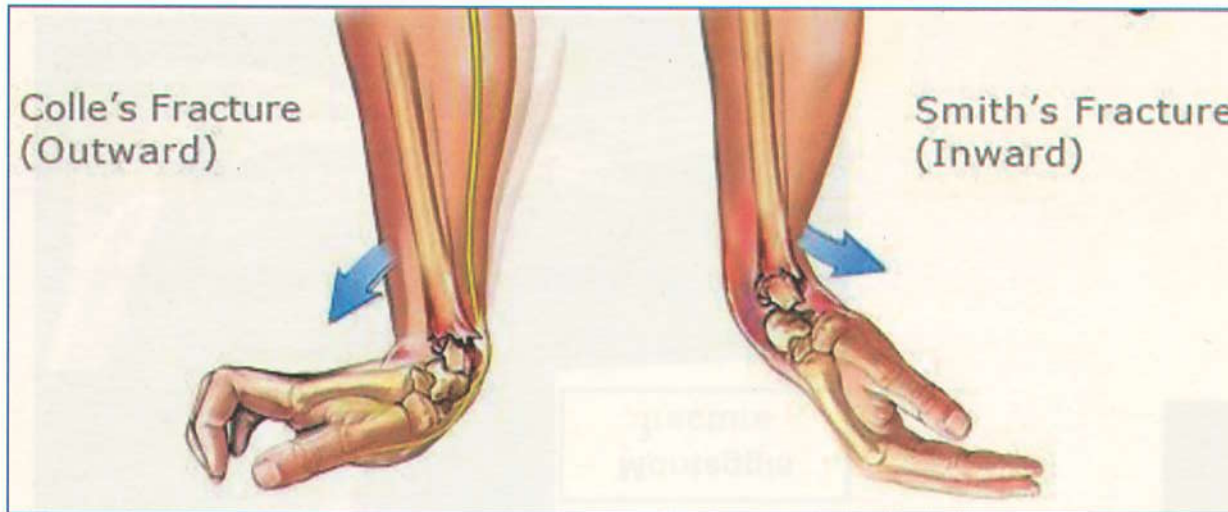


Monteggia
fracture



Galeazzi fracture

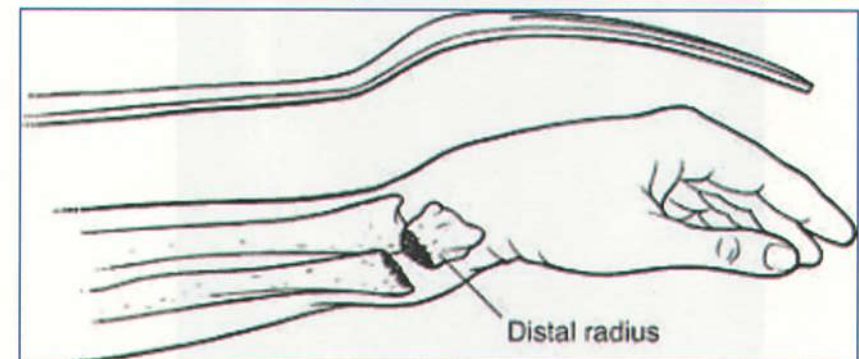




Colle's fracture



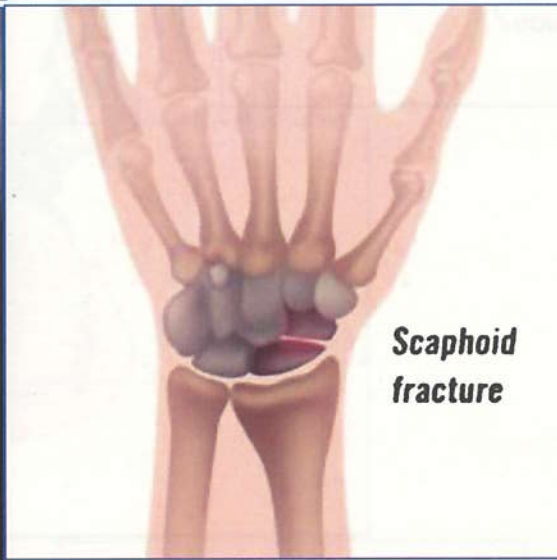
Colle's cast



Dinner fork



Scaphoid fracture

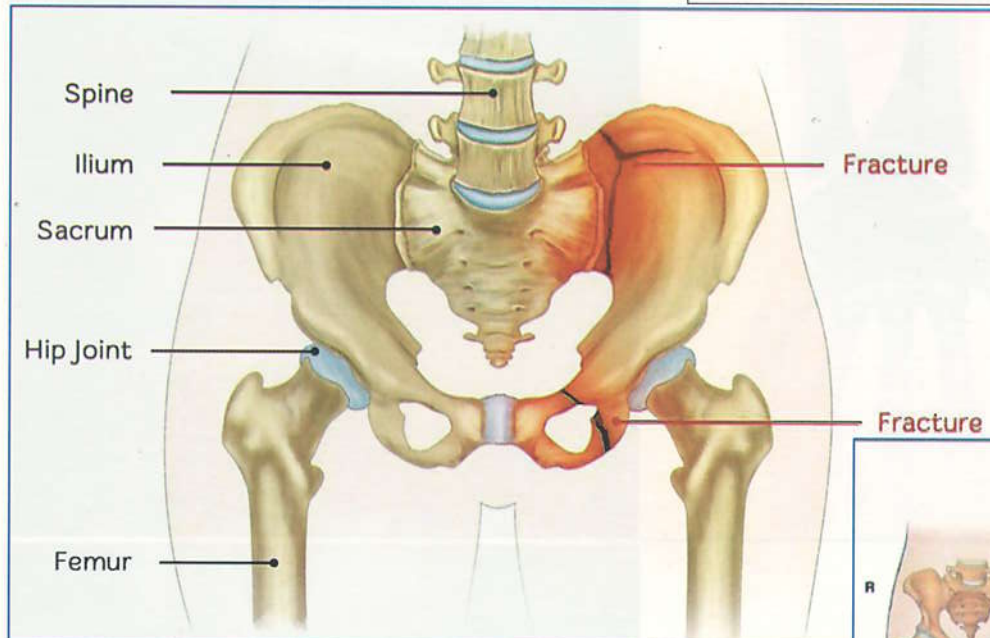


Scaphoid fracture

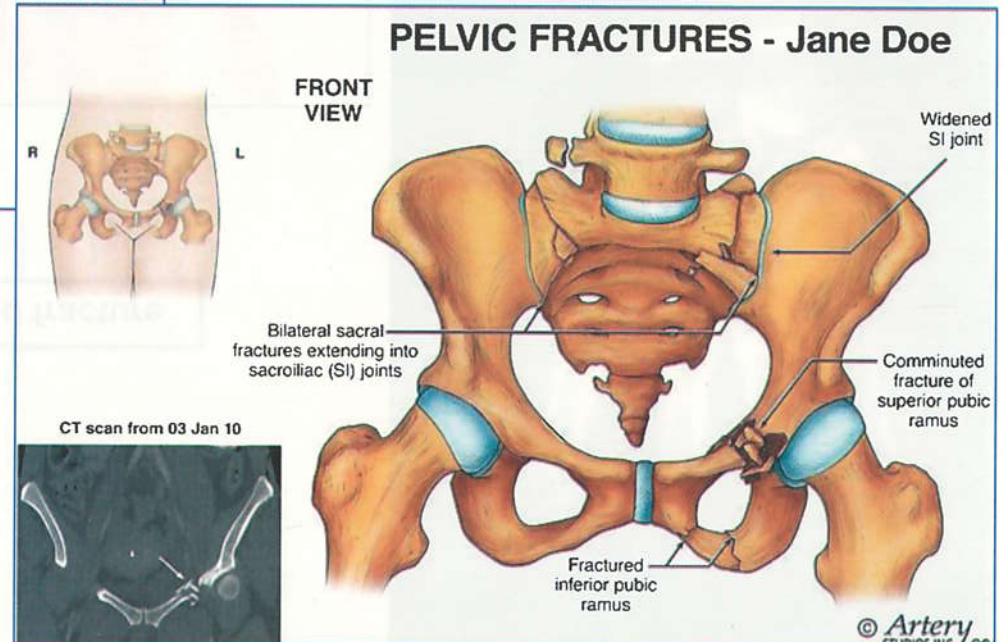


5th metacarpal fracture

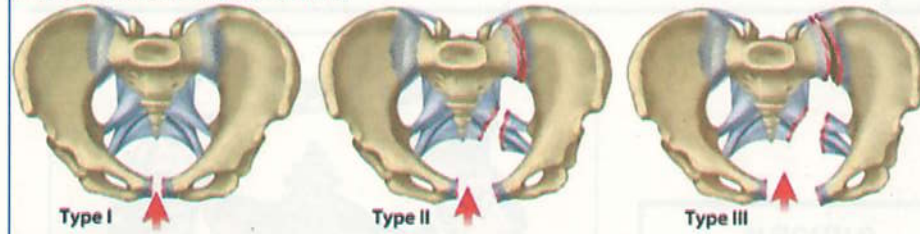
Lower limb fractures



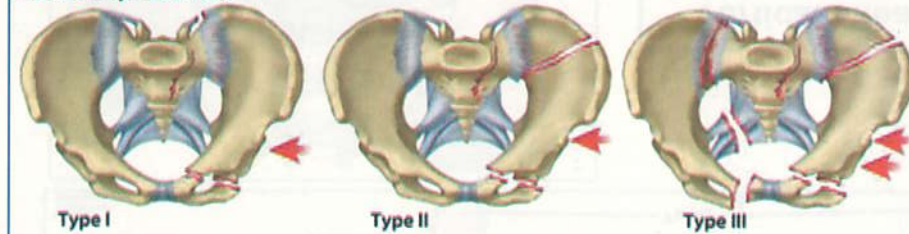
Fracture pelvis



Anterior Posterior Compression (APC)



Lateral Compression (LC)

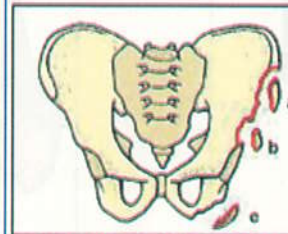


Vertical Shear (VS)



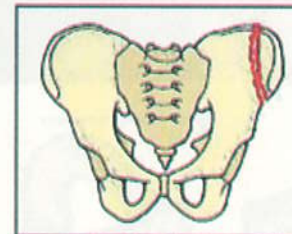
STABLE PELVIC FRACTURES

Avulsion



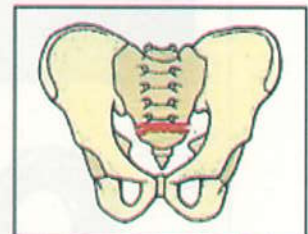
involving (a) anterosuperior or (b) anteroinferior iliac spine or (c) ischial tuberosity

Duverney



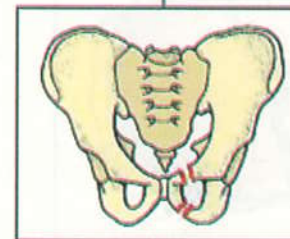
involving iliac wing

Sacral

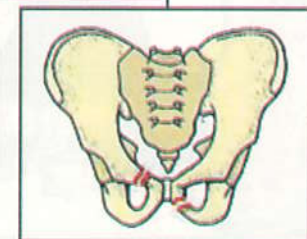


transversely oriented

Ischiopubic Rami

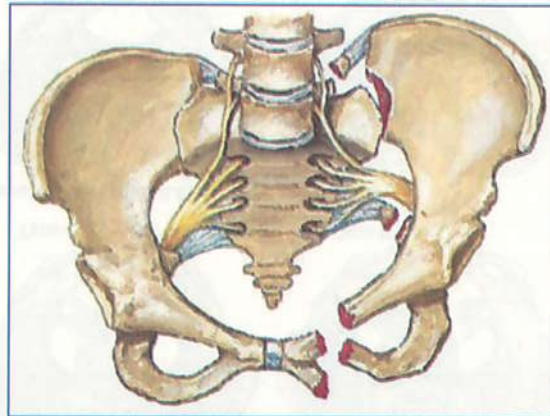
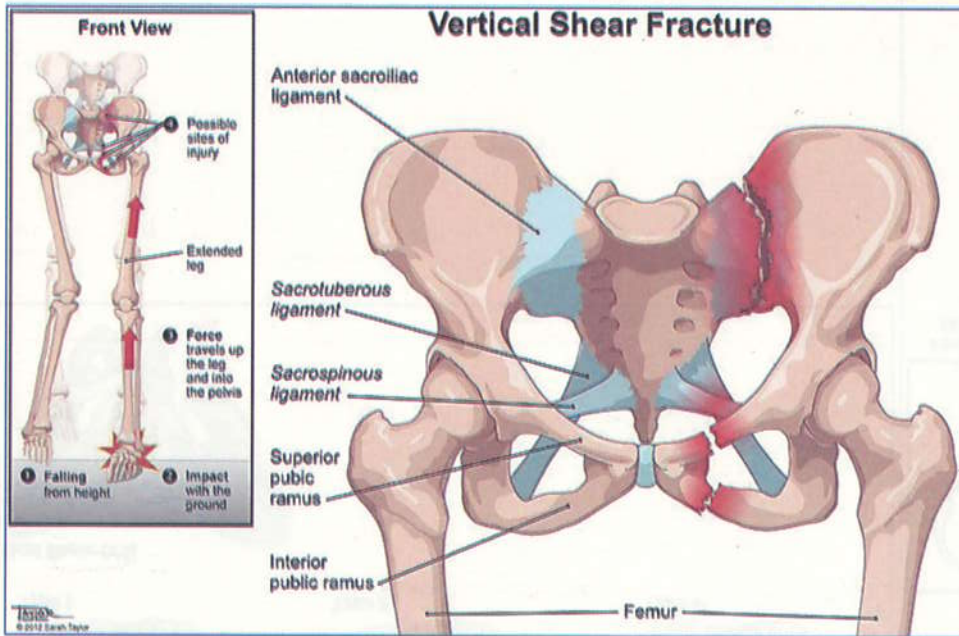


unilateral

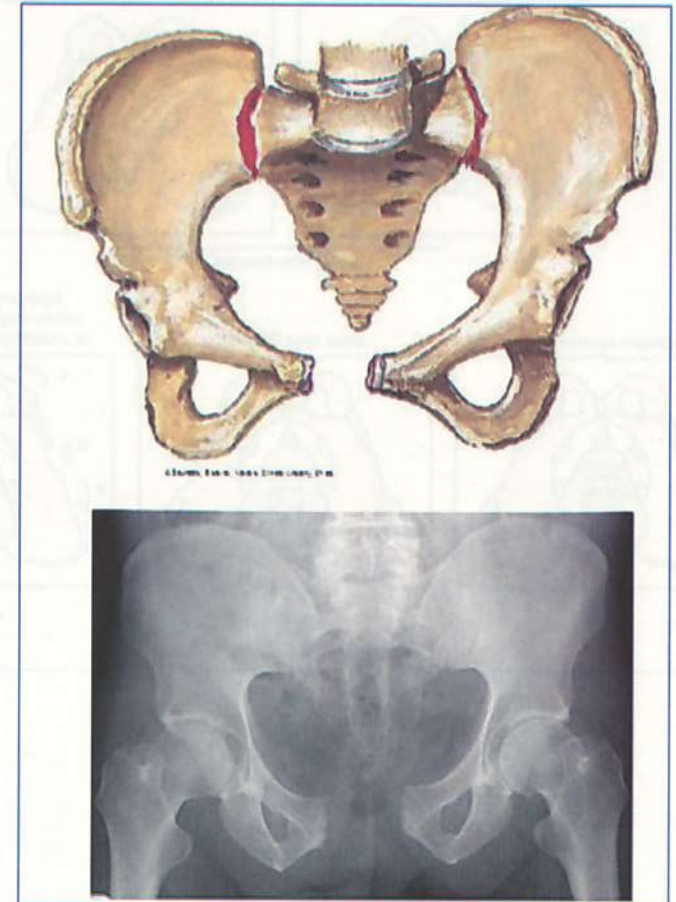


bilateral

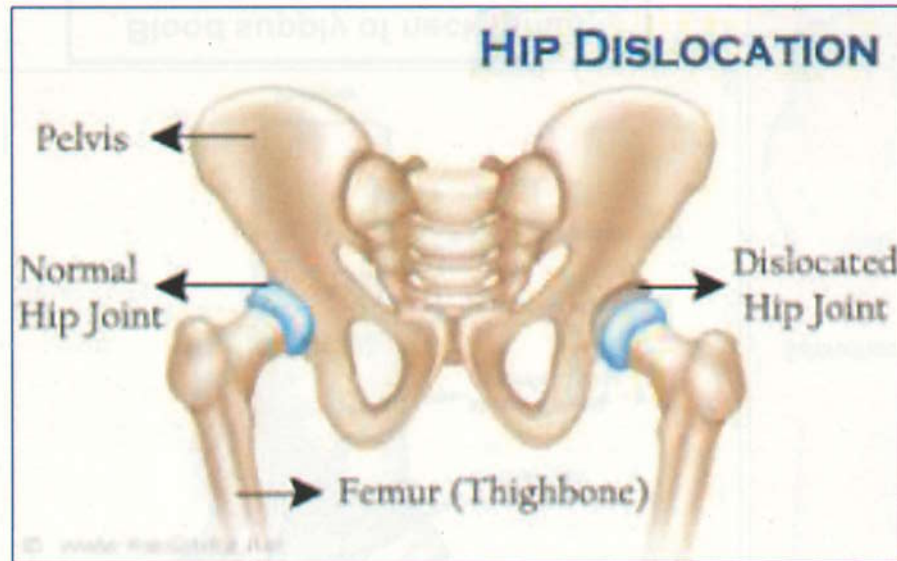
Unstable pelvic fractures



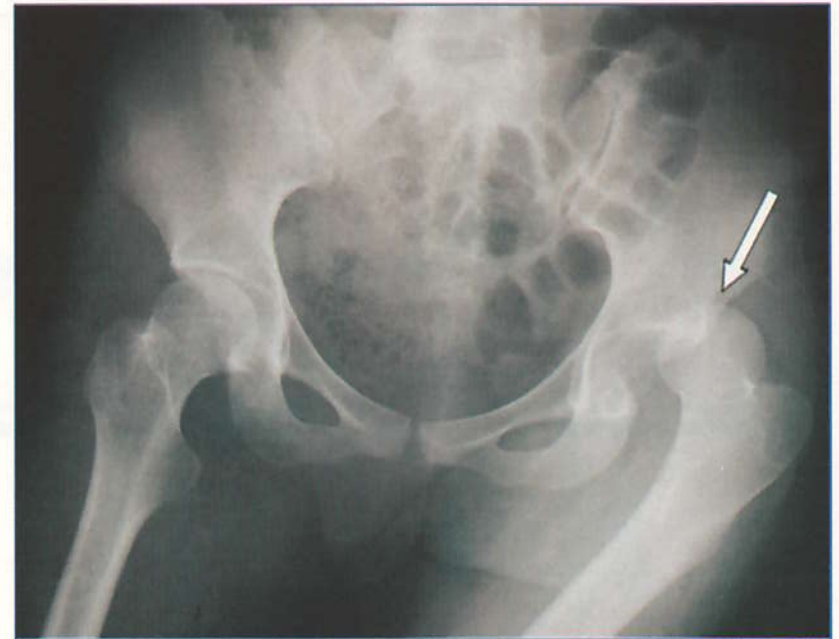
Vertical shear fracture



Open book fracture

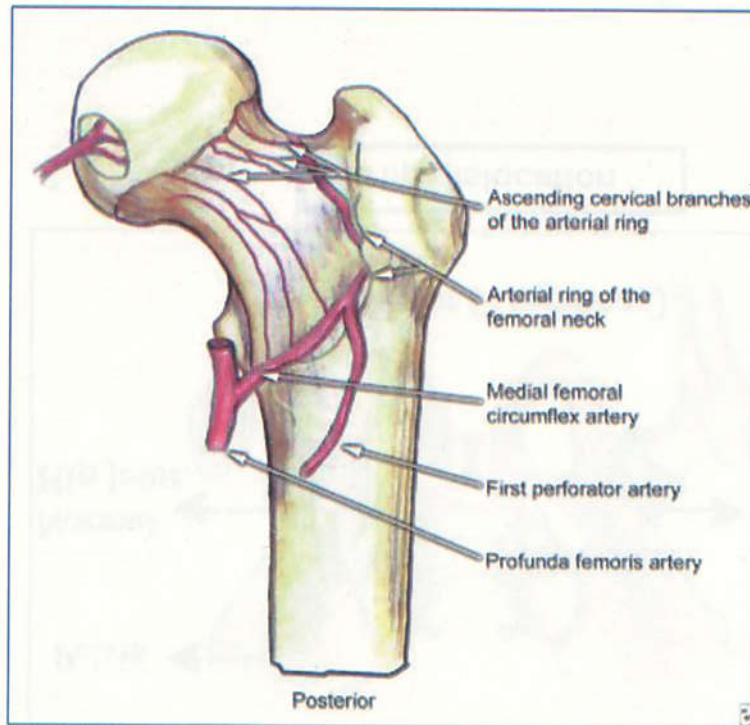


Hip dislocation

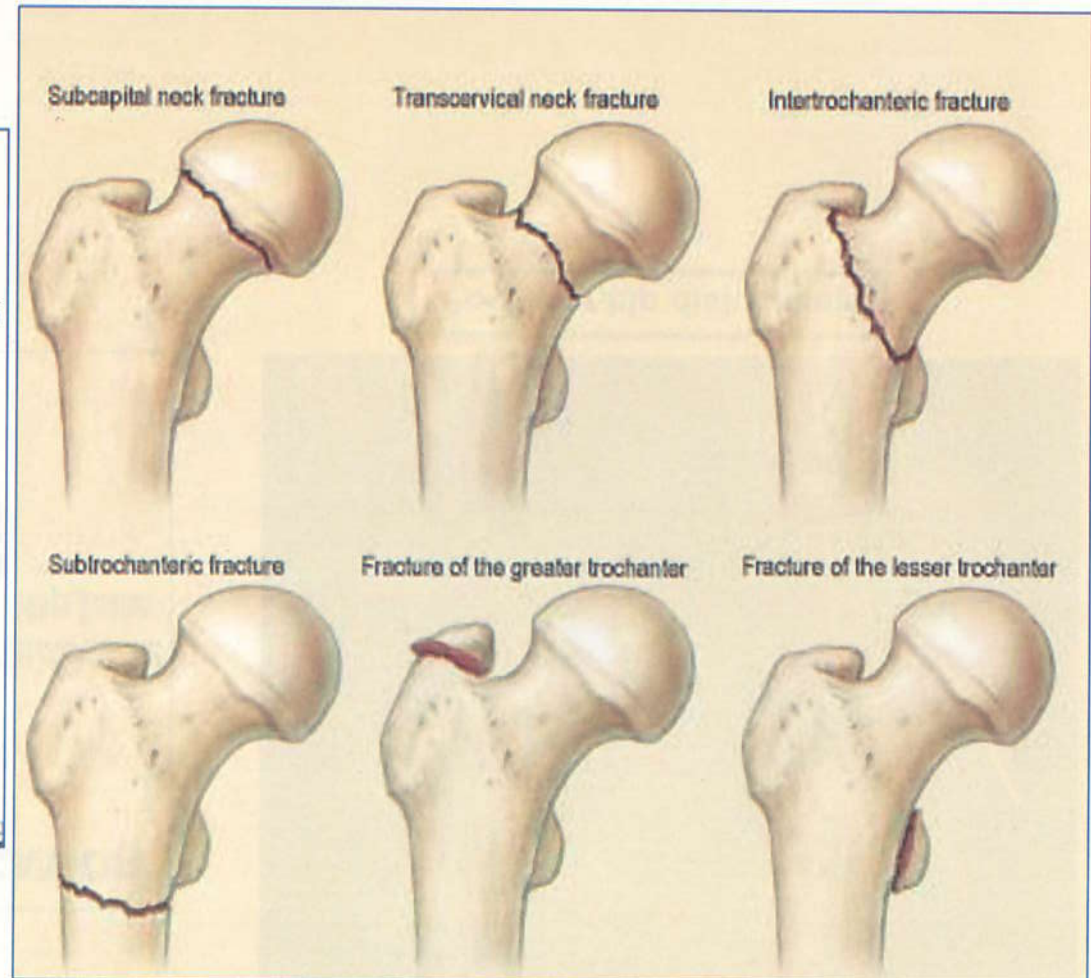


Posterior hip_dislocation

Fracture neck femur

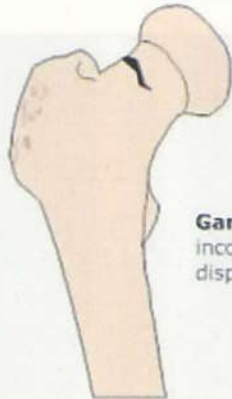


Blood supply of neck femur



GARDEN CLASSIFICATION OF NECK OF FEMUR FRACTURE

*based on severity



Garden I fracture
incomplete and minimally displaced.



Garden II fracture
complete, nondisplaced.



Garden III fracture
complete fracture and partially displaced.



Garden IV fracture
completely displaced, with no engagement of the 2 principal fragments.

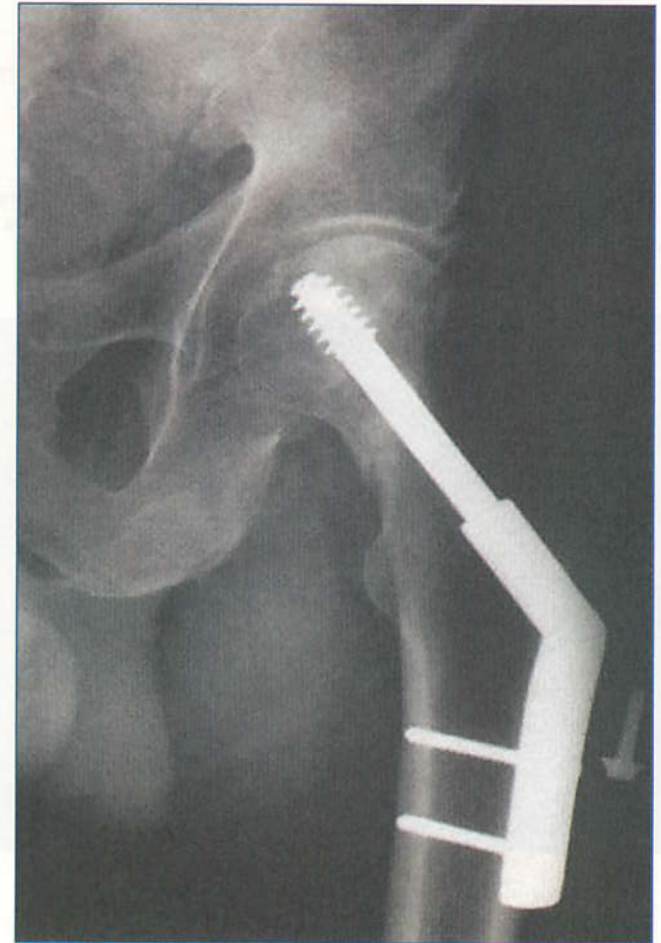
Shortening and external rotation of lower extremity



Fracture neck femur

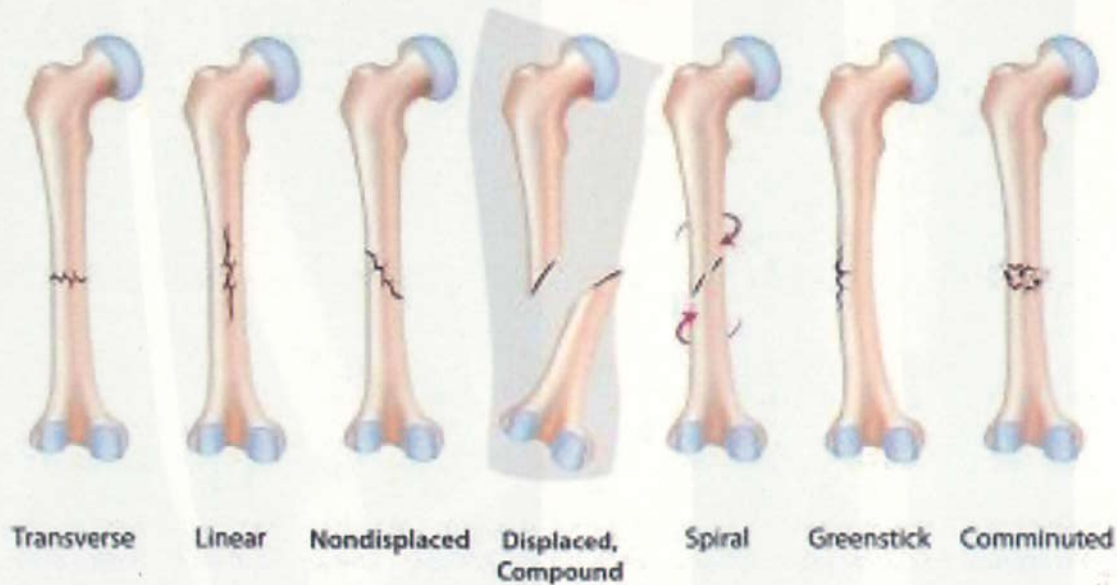


Hemiarthroplasty



Dynamic hip screw

Femoral shaft fracture



Fracture shaft femur



Thomas splint



Intramedullary nail

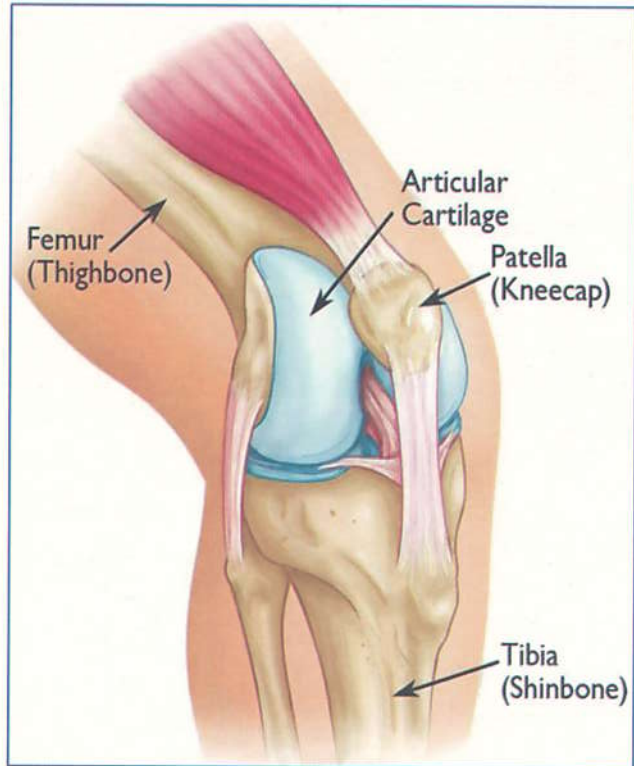


Plate and screw



**Supracondylar_fracture femur
with risk of popliteal artery
injury**

Knee joint

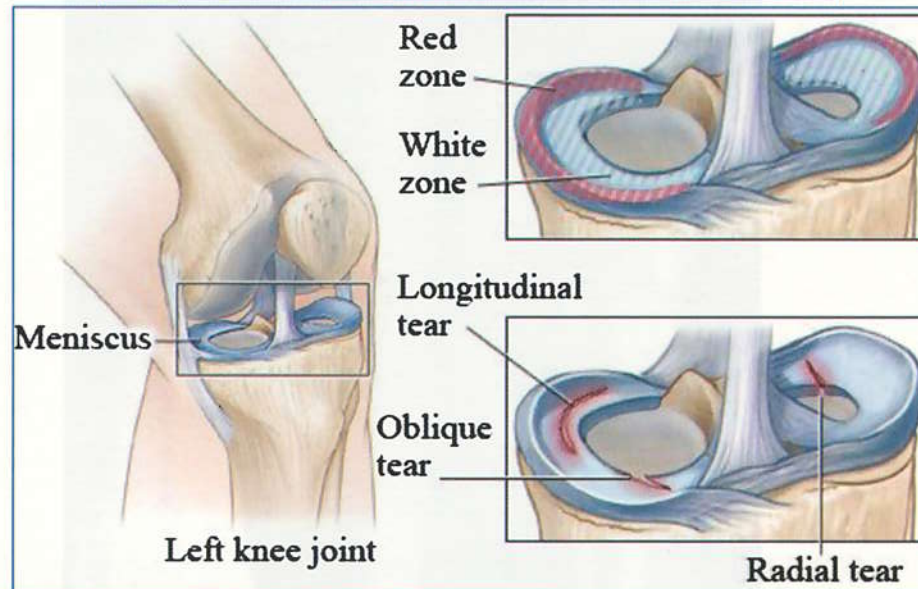
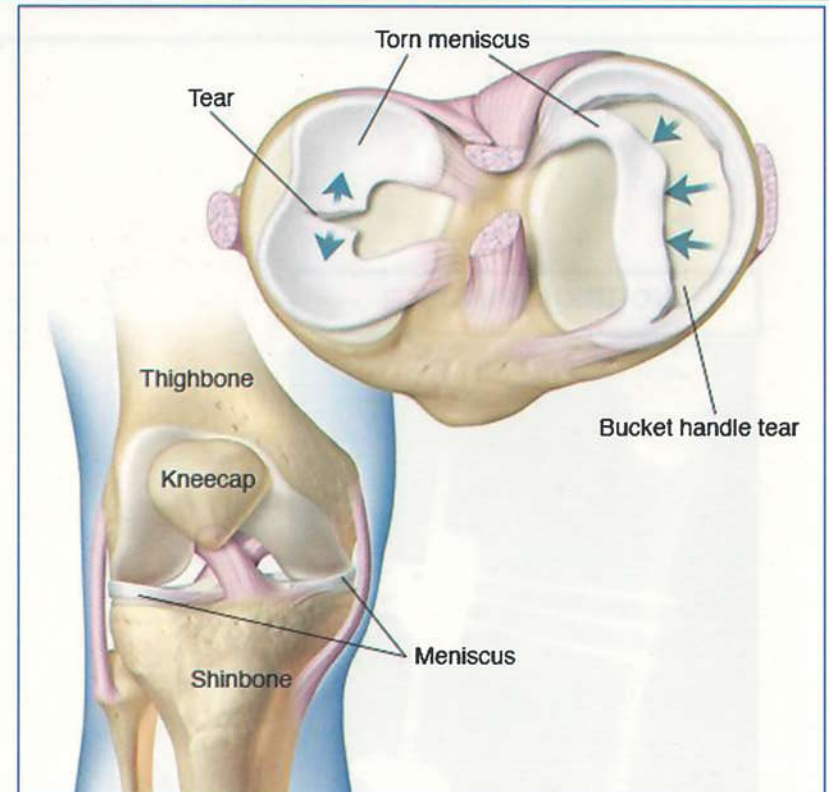
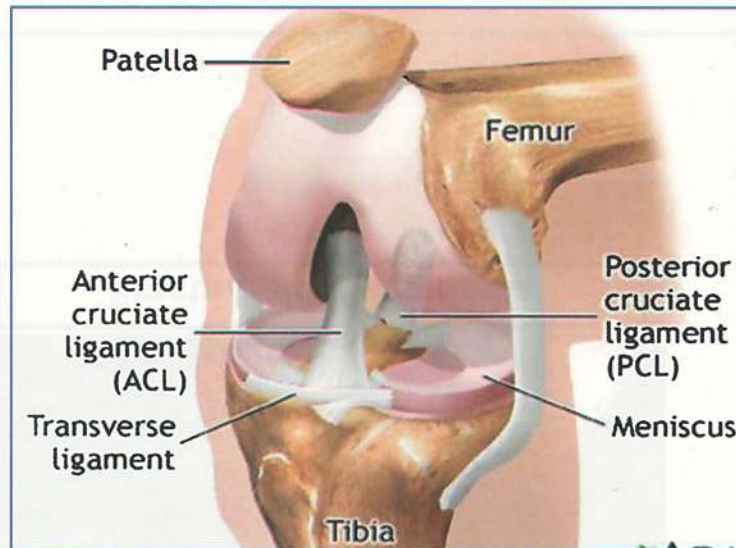


Knee joint



Fracture patella





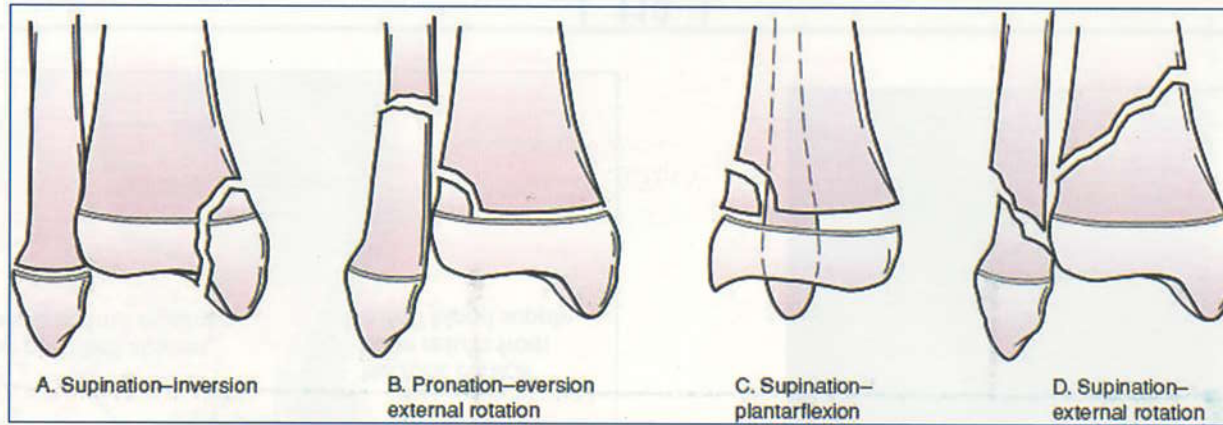
Meniscus



Fracture tibia and fibula

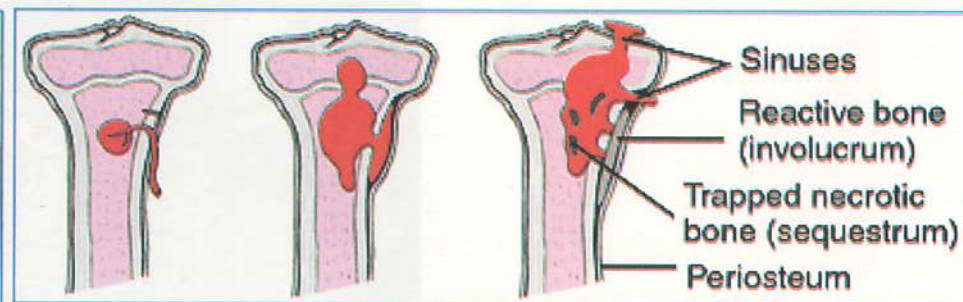
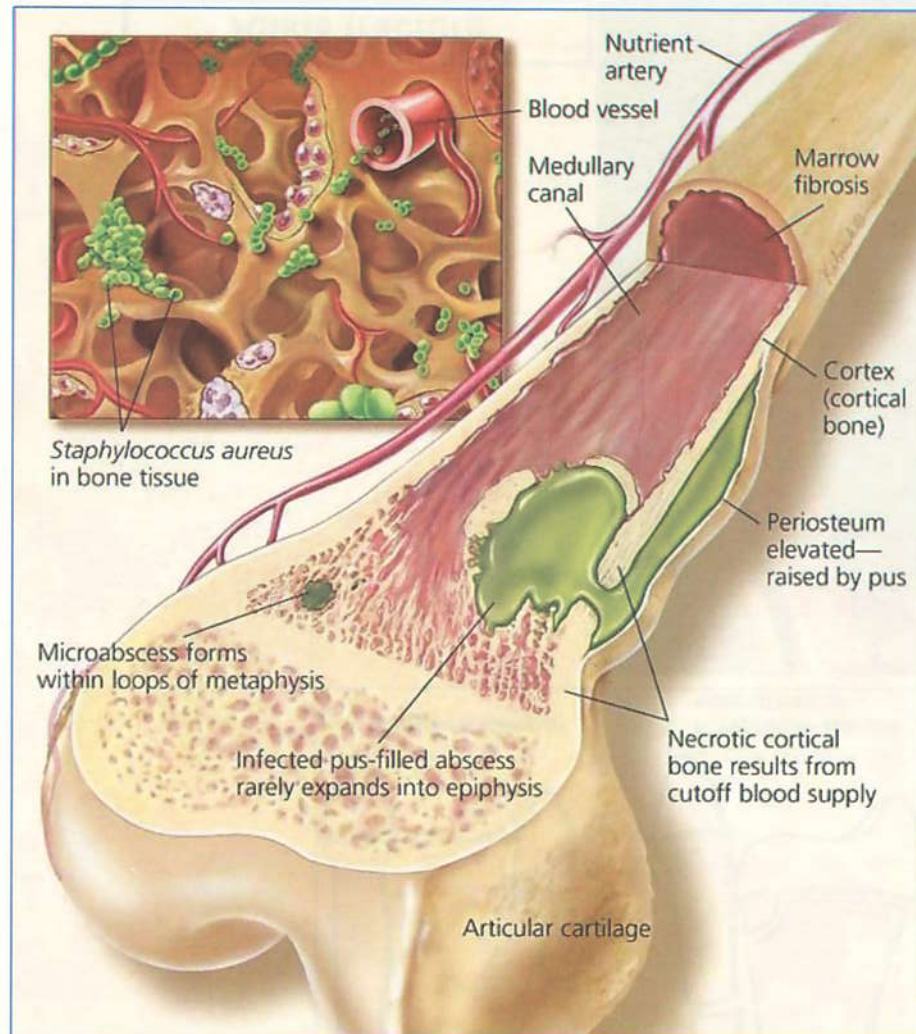


External fixation



Ankle fracture

Bone infection



Osteomyelitis





Brodie abscess

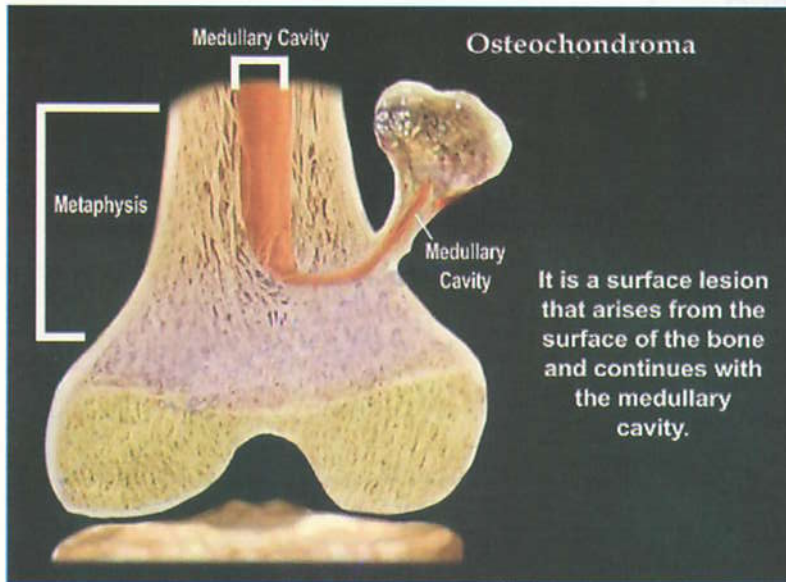


Bilateral hip osteoarthritis



Septic arthritis

Bone tumors



Osteochondroma (exostosis)

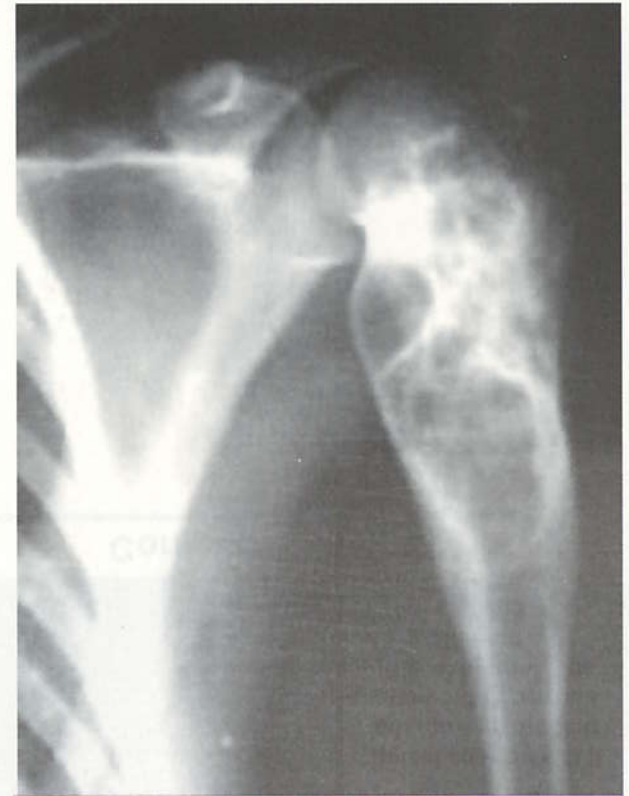




Enchondroma



Simple bone cyst



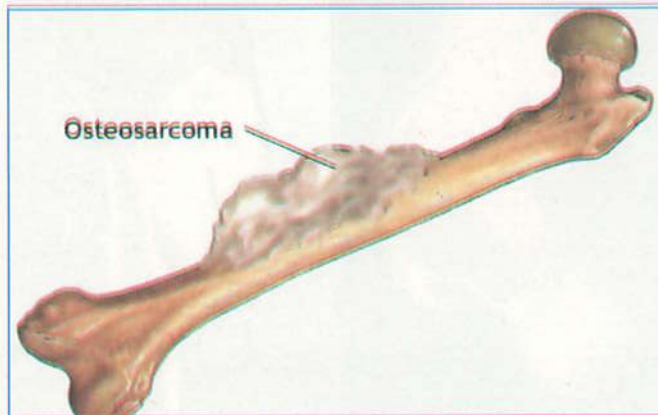
Aneurysmal bone cyst



Compact osteoma



Giant cell tumor
(Osteoclastoma)



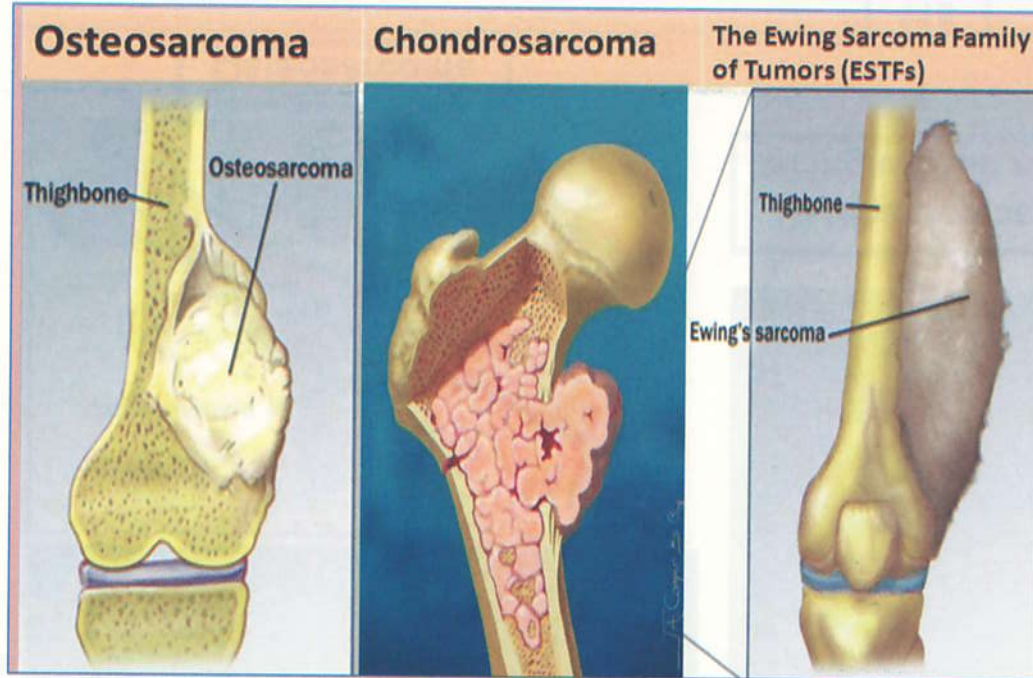
Osteosarcoma



Osteosarcoma with codman triangle & sun ray appearance



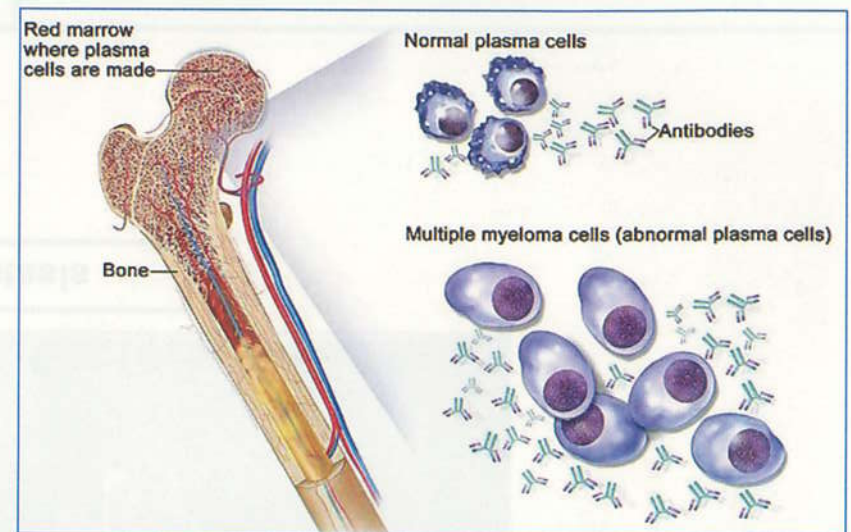
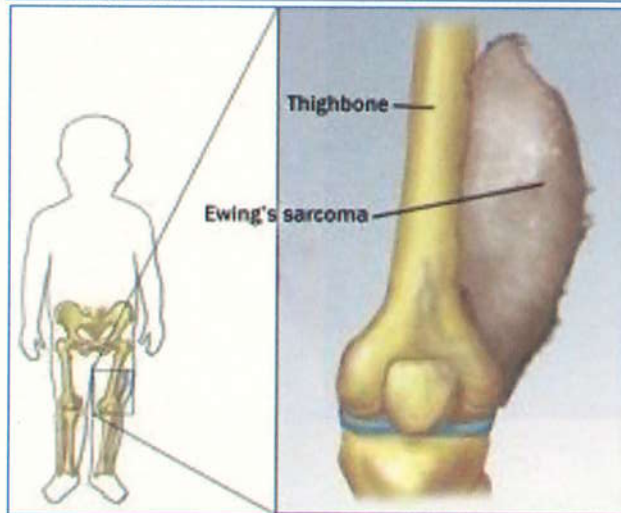
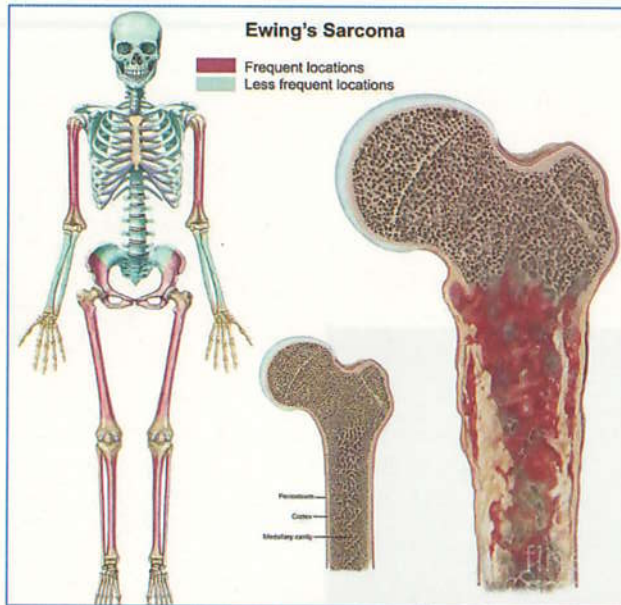
Osteosarcoma



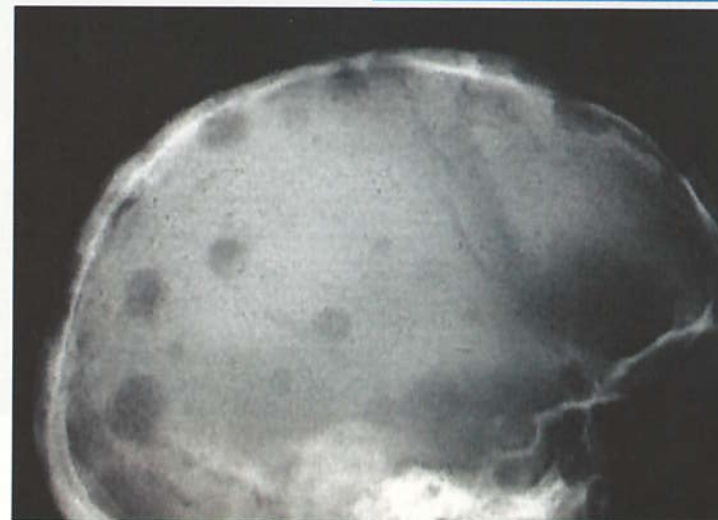
Types of bone cancer



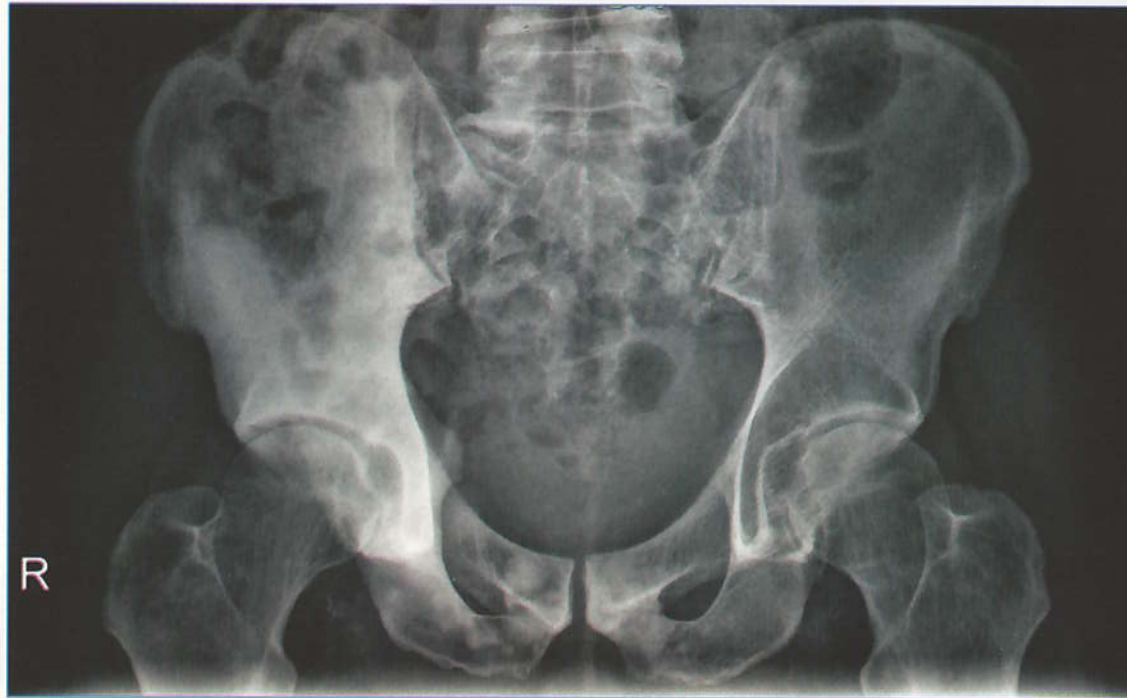
Chondrosarcoma



Multiple myeloma

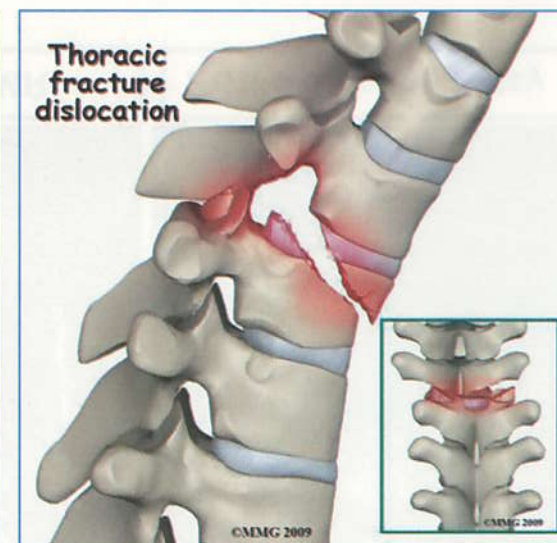
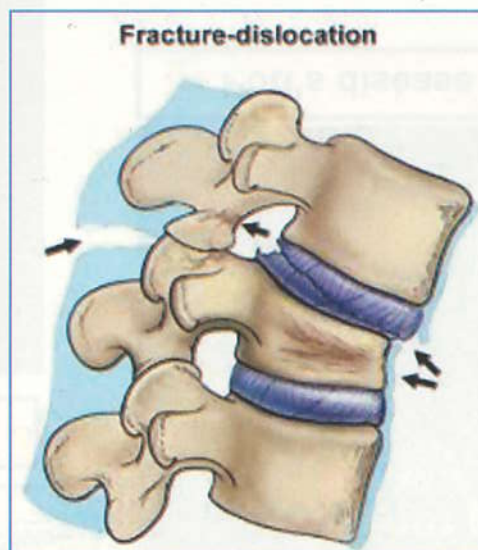


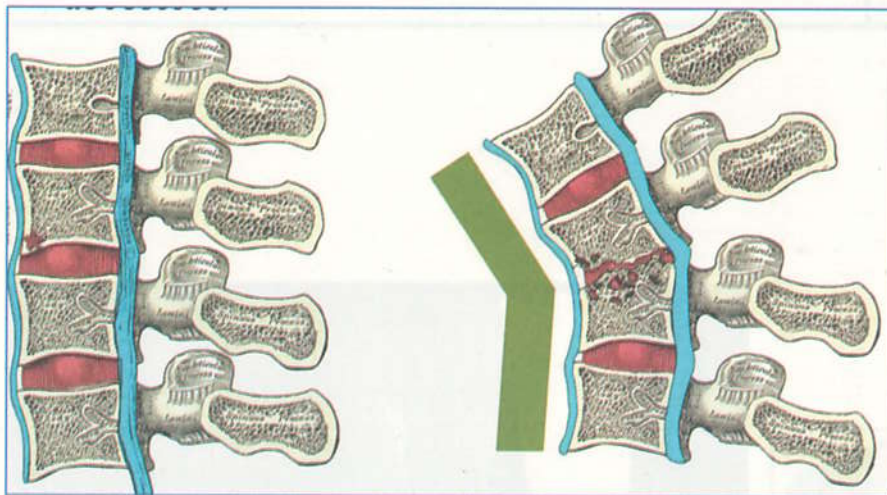
Osteolytic bone lesion
(Multiple myeloma vs metastasis)



Bone metastasis

Spine





Pott's disease (T.B. of spine)

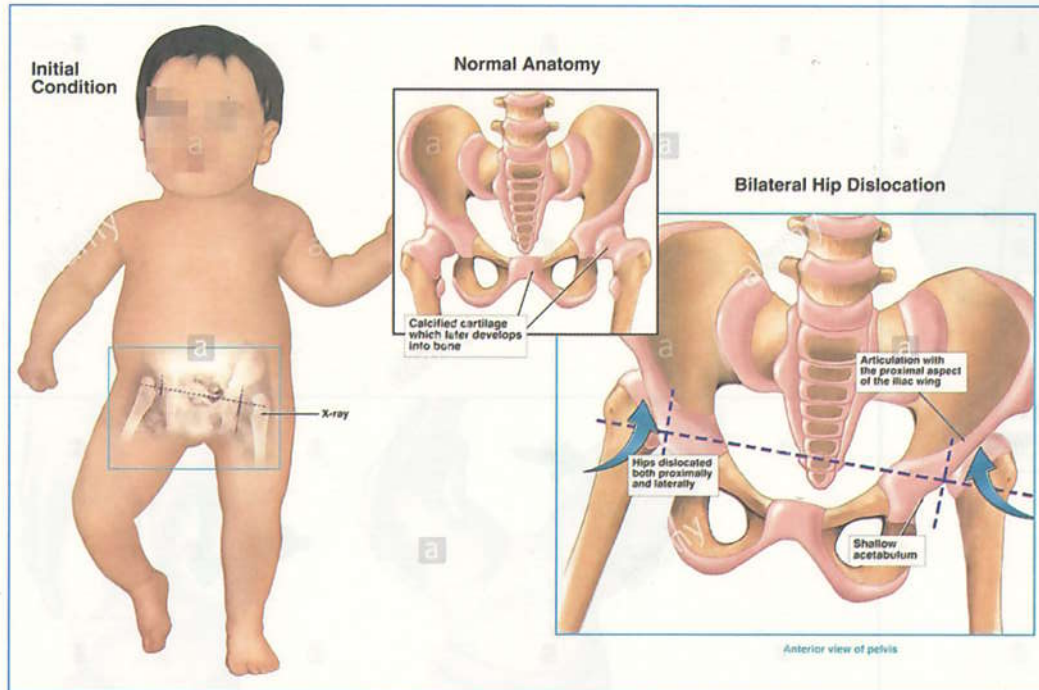


Pott's disease MRI

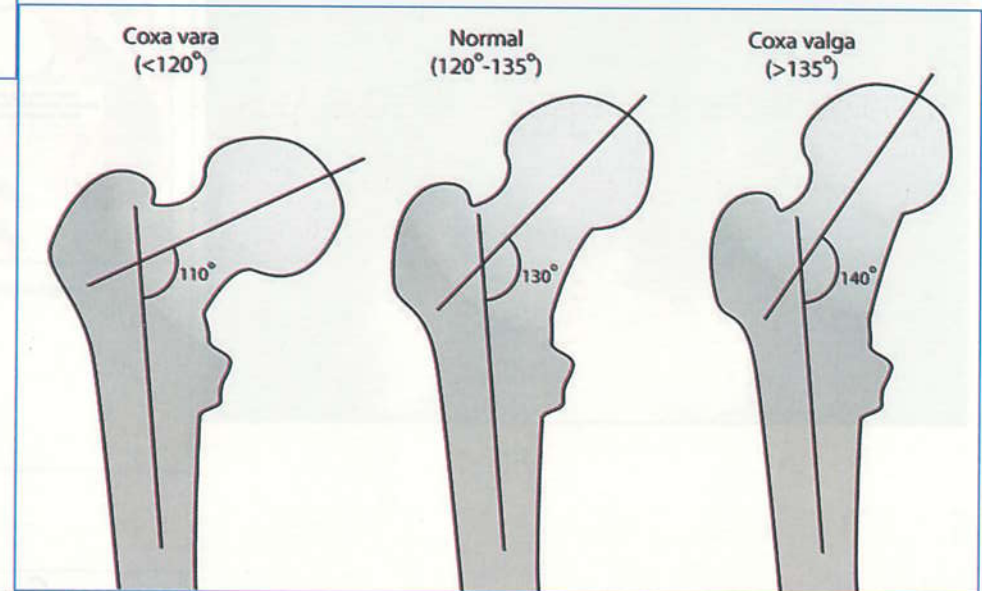
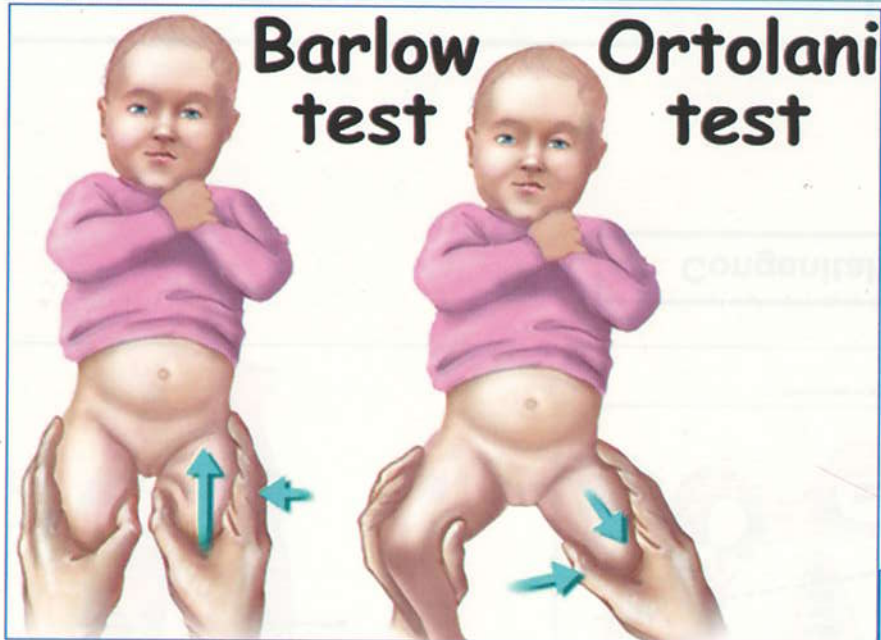


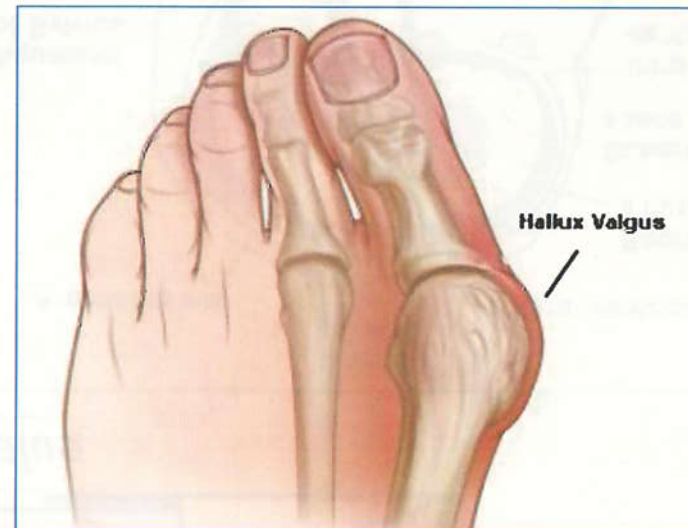
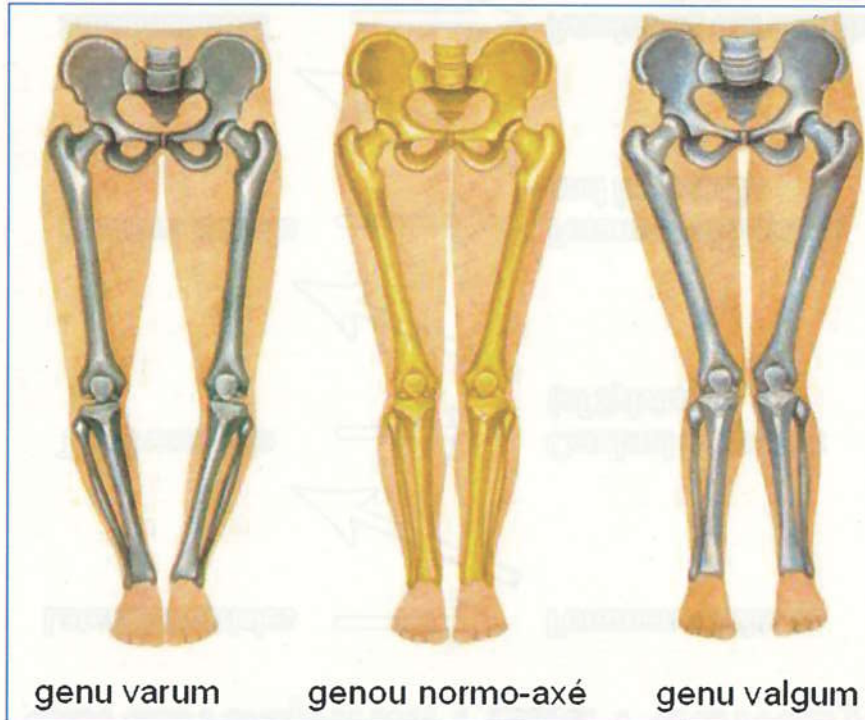
Pott's disease X-ray

Congenital



Congenital hip dislocation

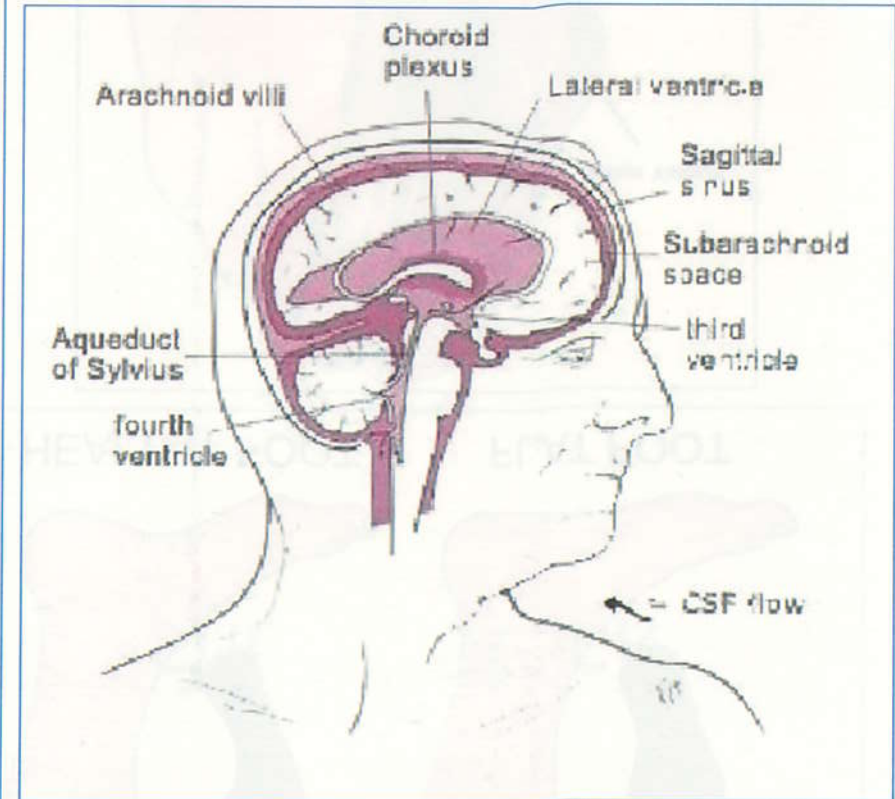
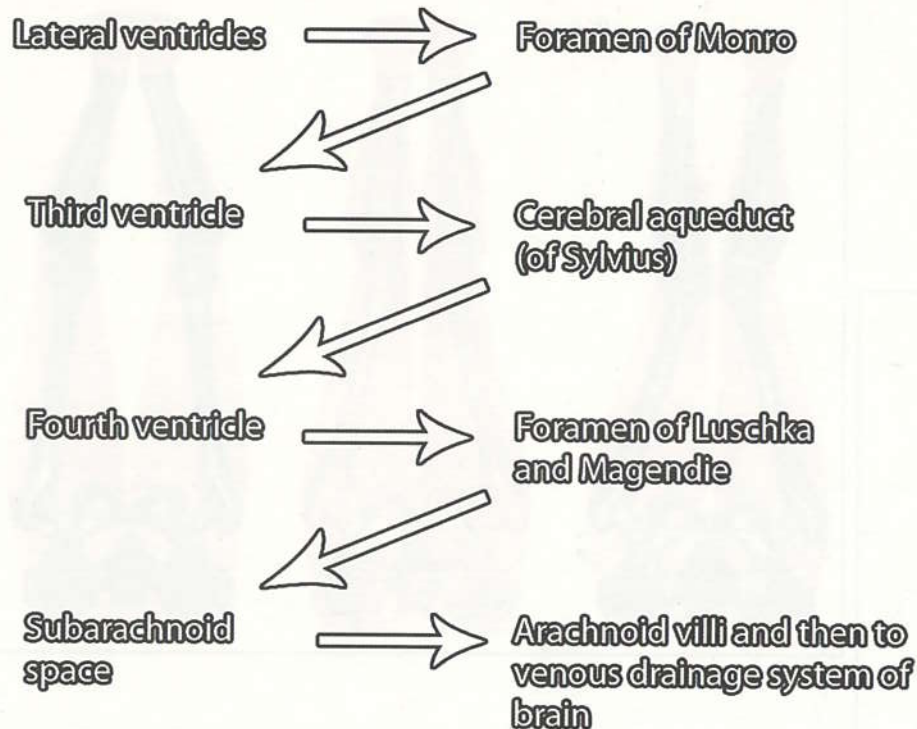




Neurosurgery

Hydrocephalus

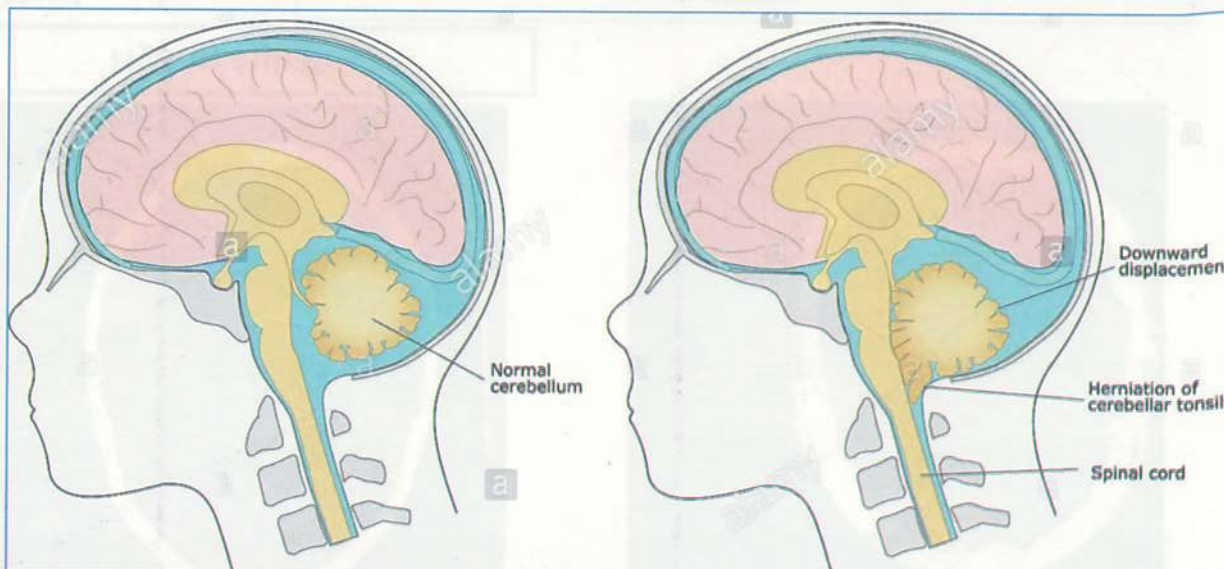
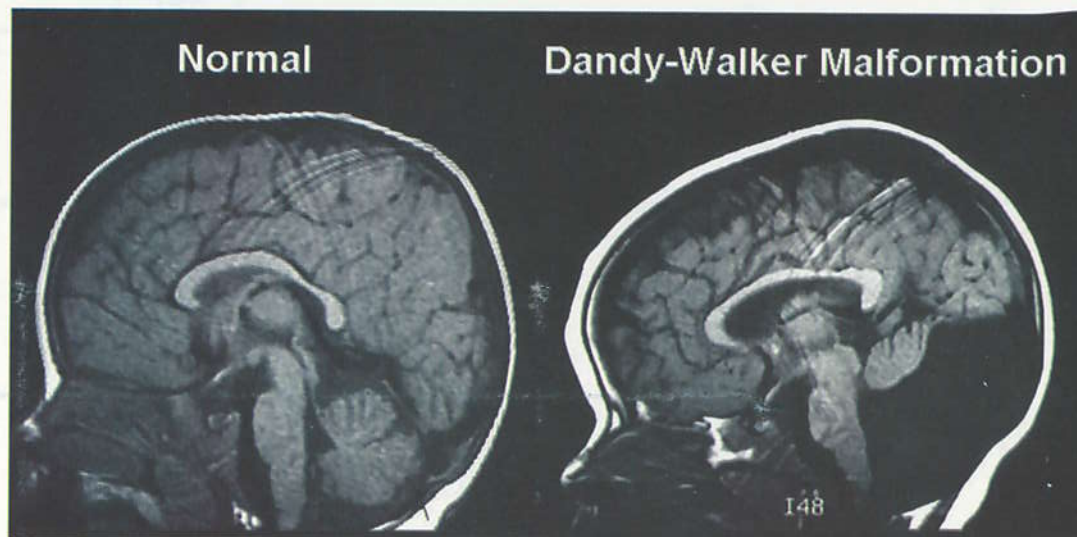
Cerebrospinal Fluid Pathway



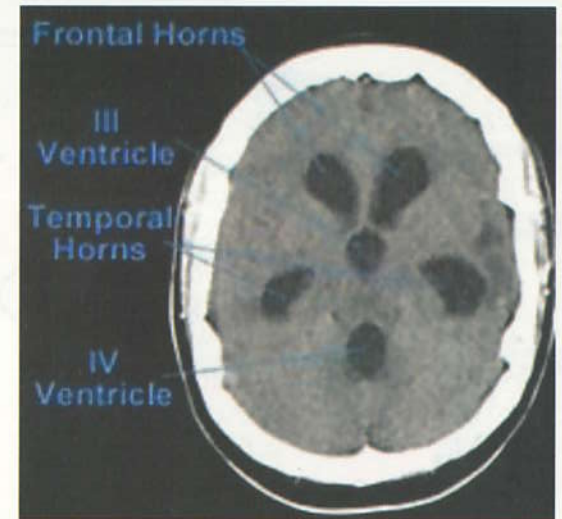
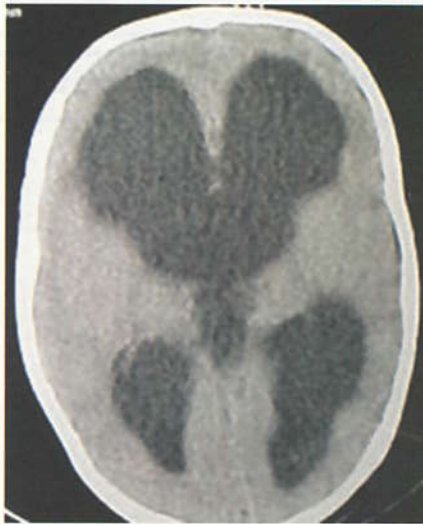
CSF pathway



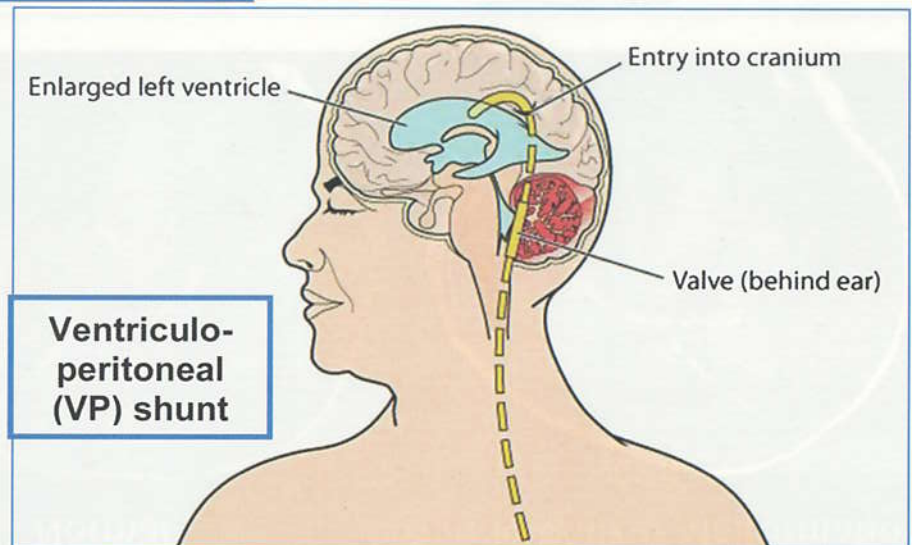
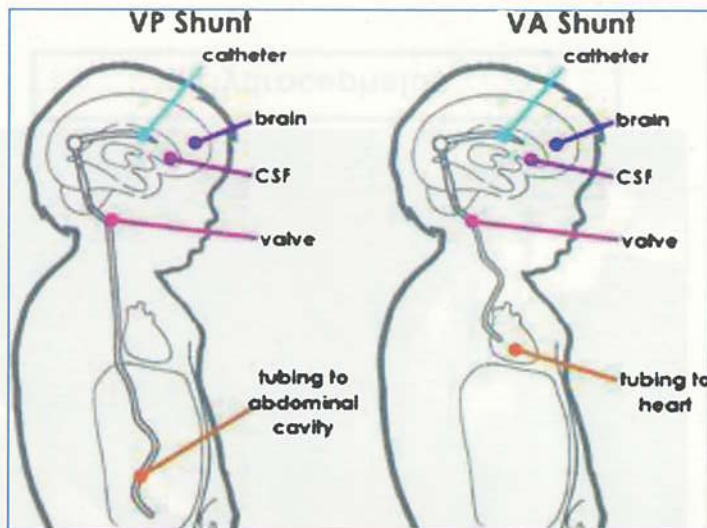
Hydrocephalus



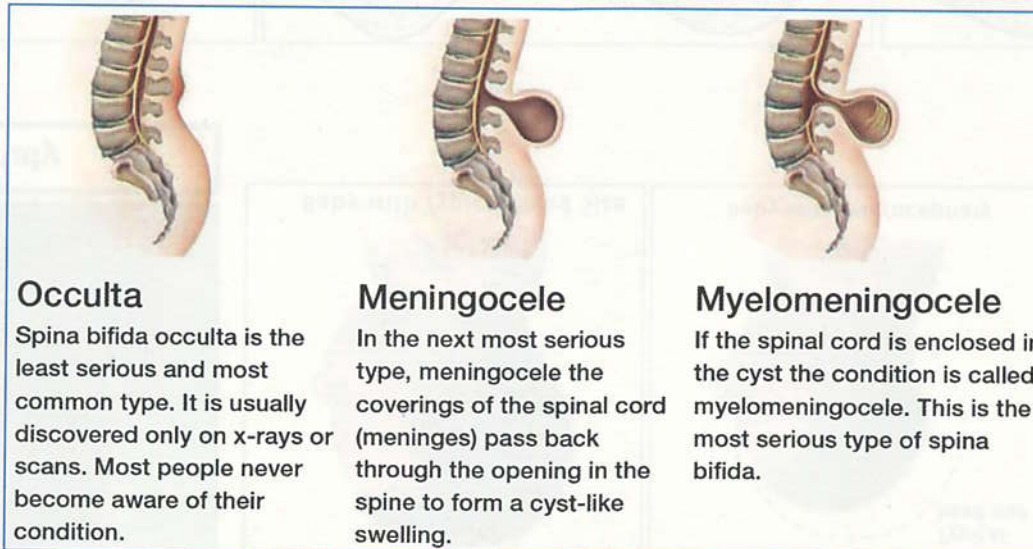
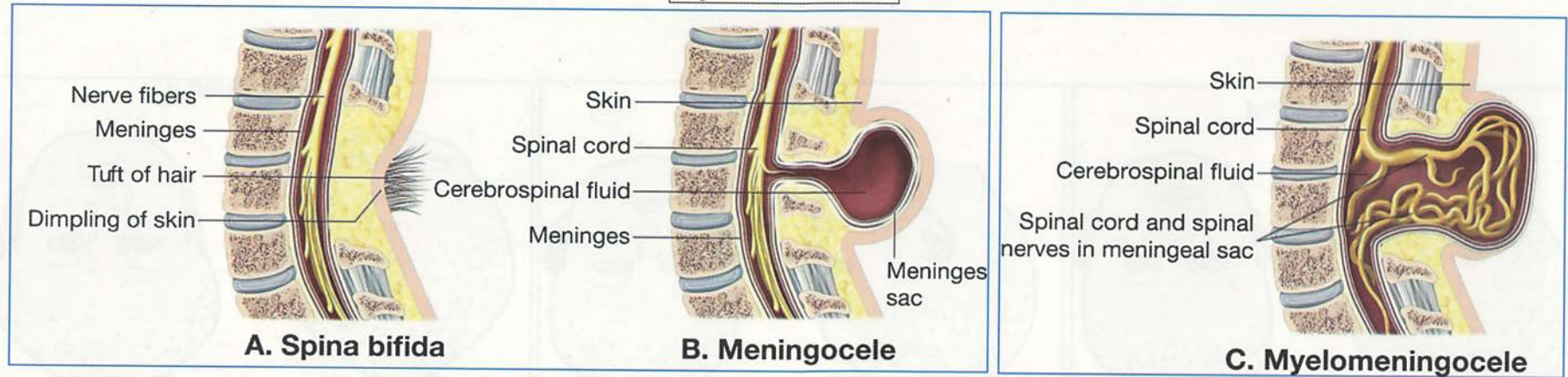
Arnold Chiari malformation



Hydrocephalus



Spina bifida



Occulta

Spina bifida occulta is the least serious and most common type. It is usually discovered only on x-rays or scans. Most people never become aware of their condition.

Meningocele

In the next most serious type, meningocele the coverings of the spinal cord (meninges) pass back through the opening in the spine to form a cyst-like swelling.

Myelomeningocele

If the spinal cord is enclosed in the cyst the condition is called myelomeningocele. This is the most serious type of spina bifida.

Types of spina bifida

Craniostenosis



Microcephaly



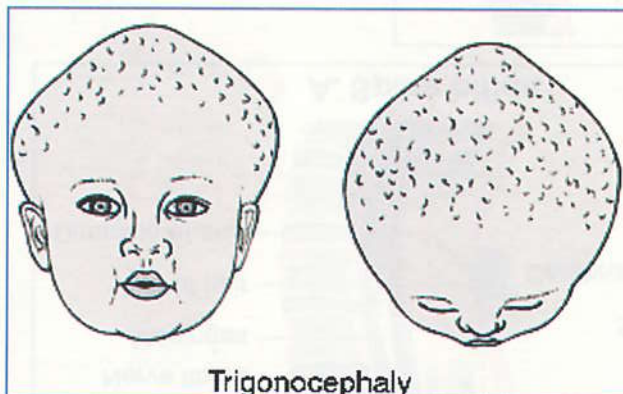
Baby with Typical Head Size



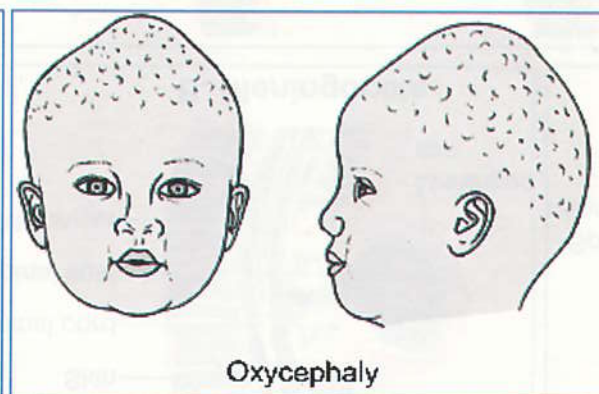
Baby with Microcephaly



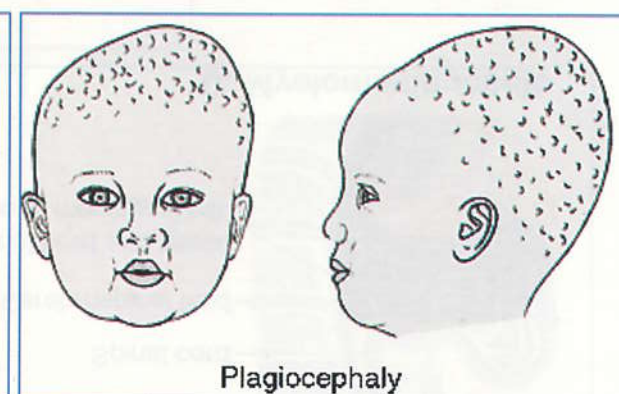
Baby with Severe Microcephaly



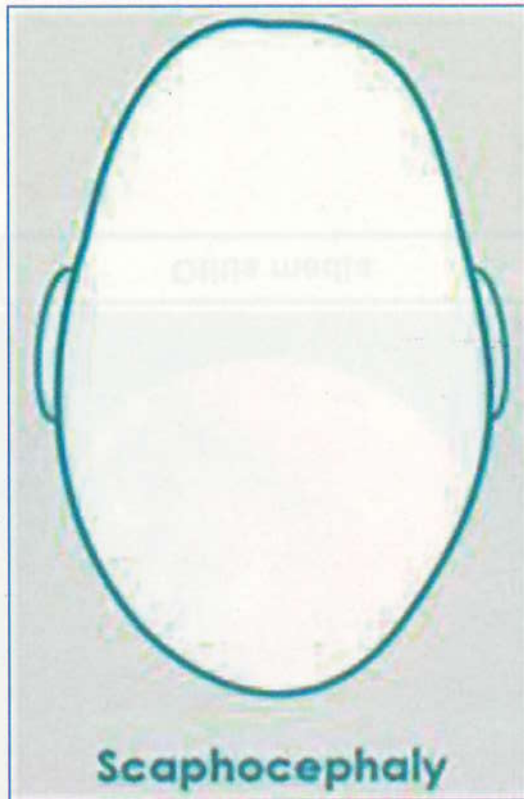
Trigonocephaly



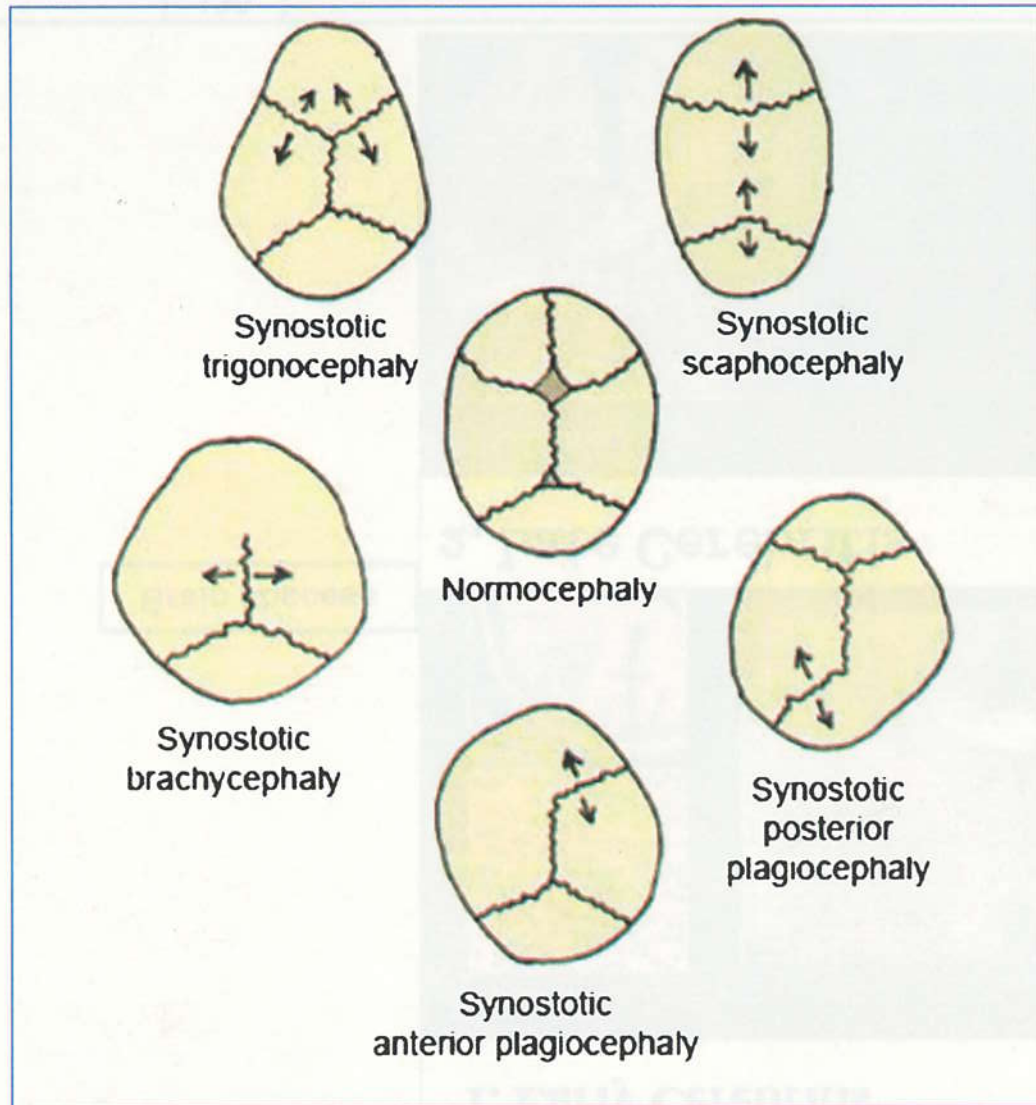
Oxycephaly



Plagiocephaly



Microcephaly



Brain abscess

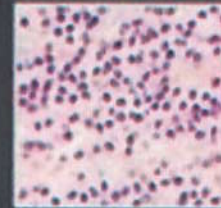


Otitis media

Brain abscess

1. Early Cerebritis

Early Cerebritis



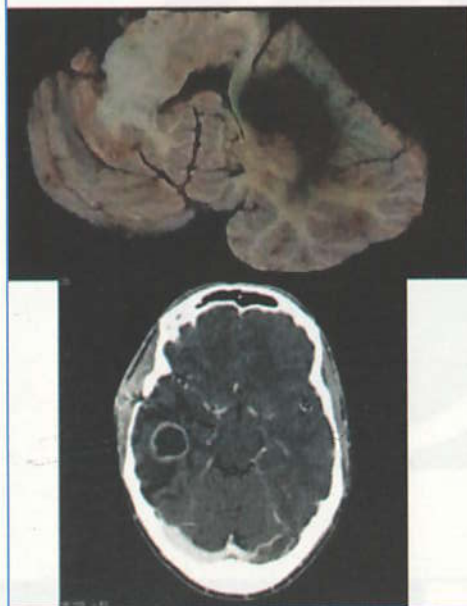
2. Late Cerebritis

Late Cerebritis



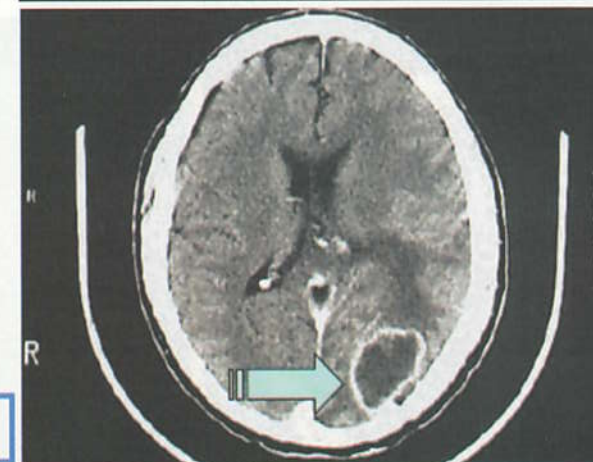
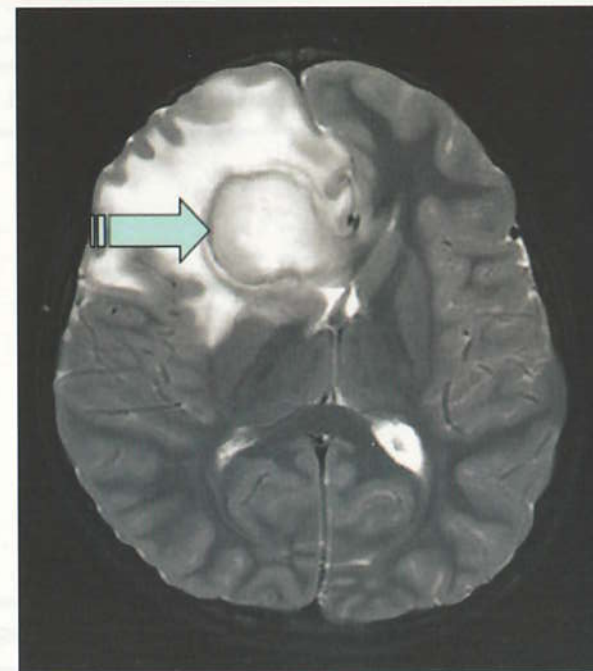
- Initial necrosis
- Peripheral rim (not completely formed)
- More mass effect

Early capsule formation

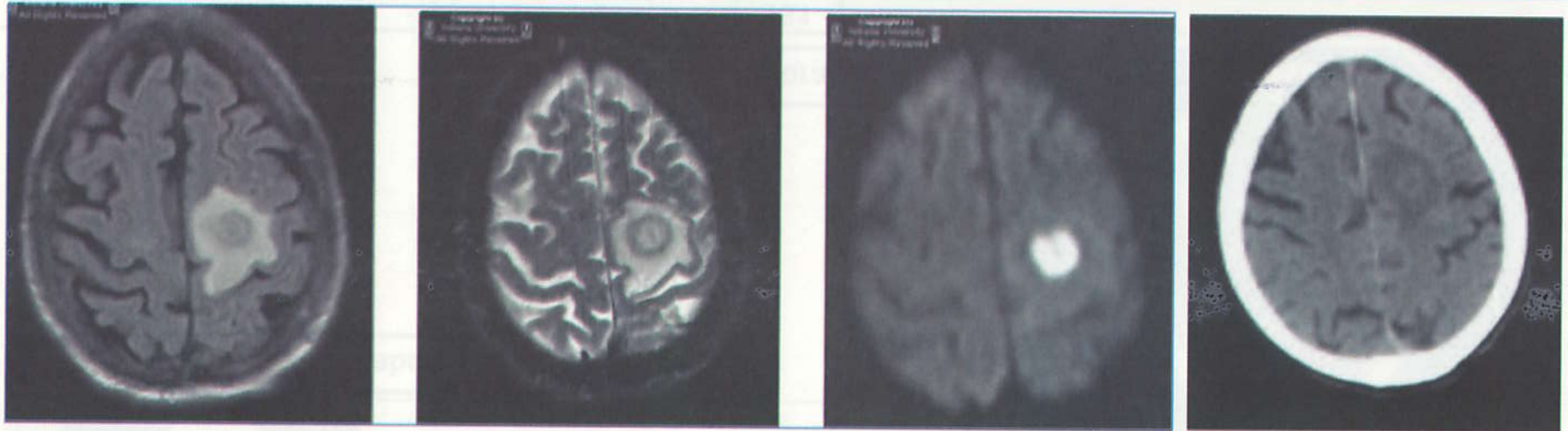


- Necrotic centre ↓
- Collagenous capsule
- Edema starts to regress
- Well-defined rim enhancing mass; an outer hypodense and inner hyperdense rim (double rim sign)

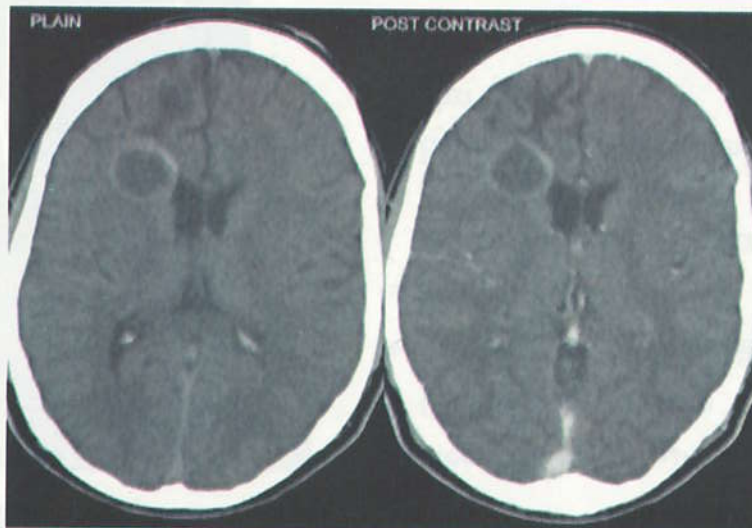
Brain abscess



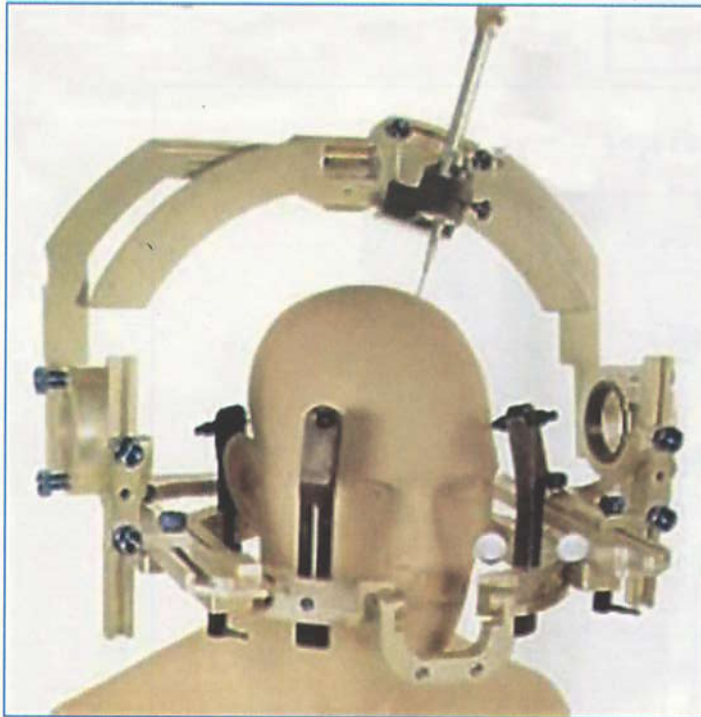
CT scan showing brain abscess



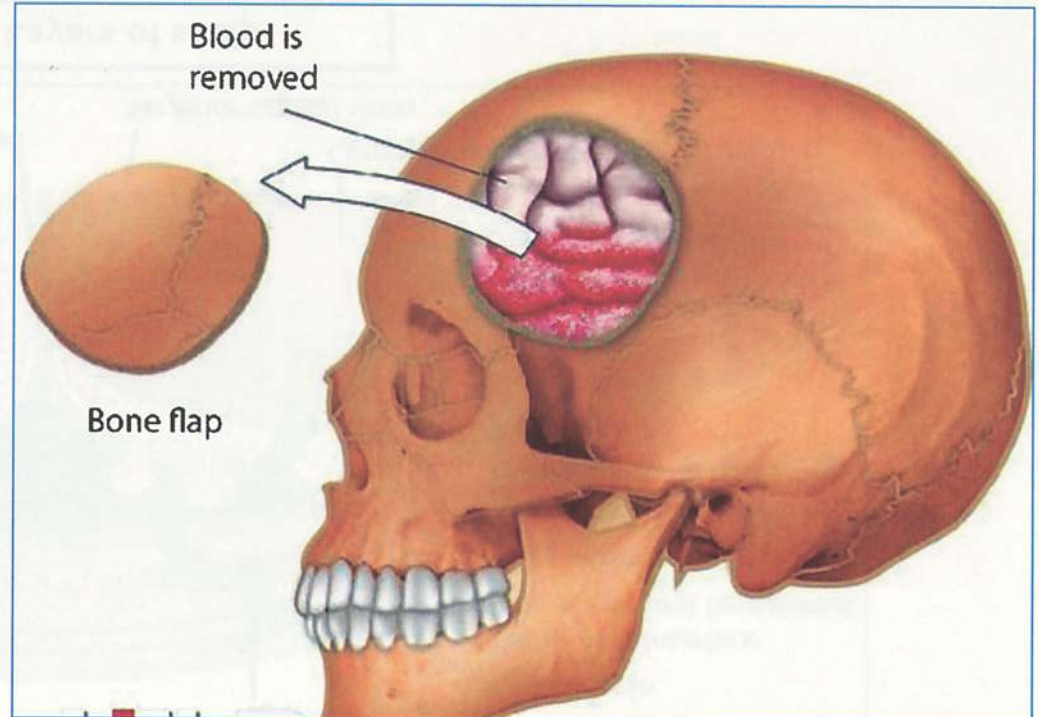
MRI & CT scan showing brain abscess



CT scan showing brain abscess

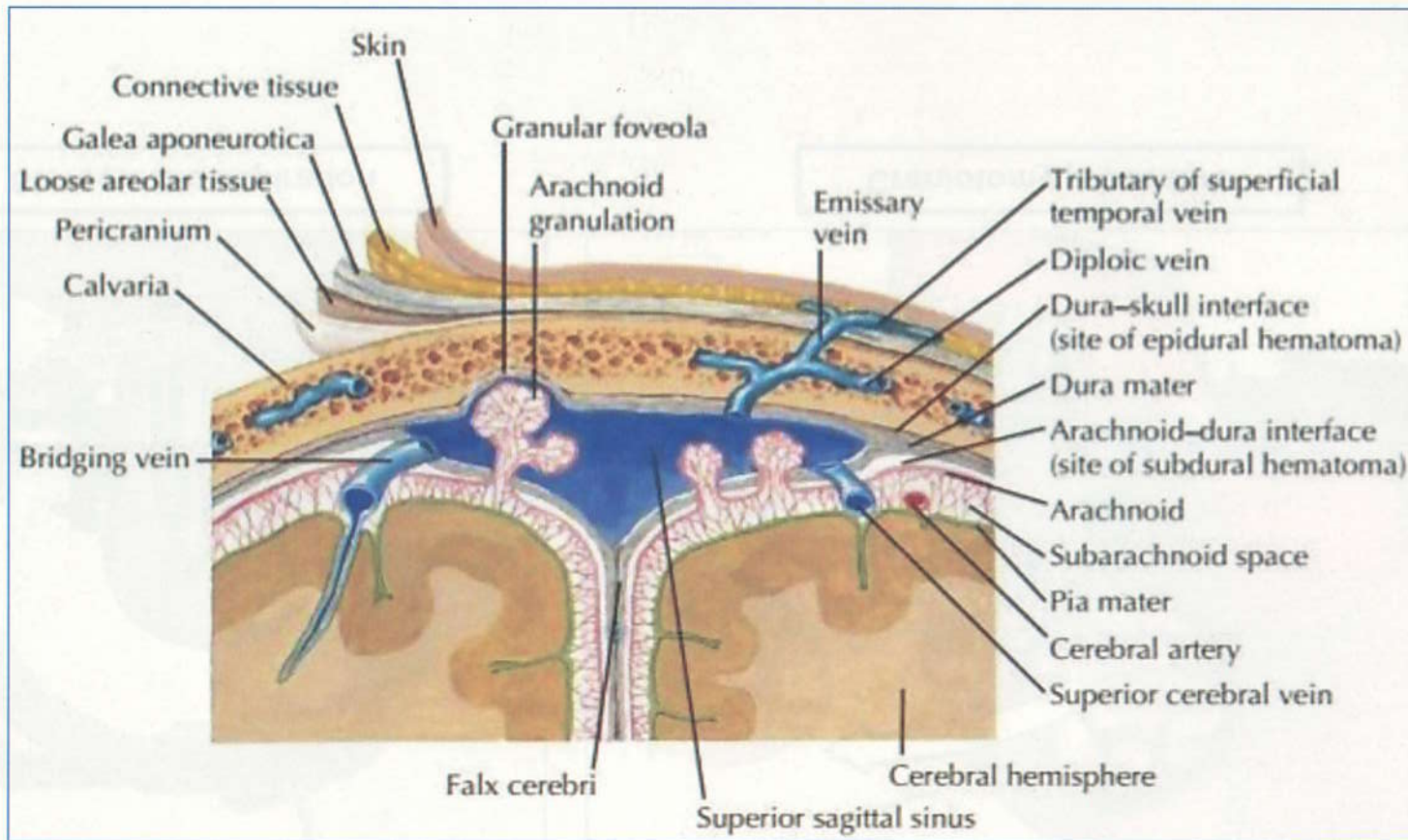


Stereotactic aspiration

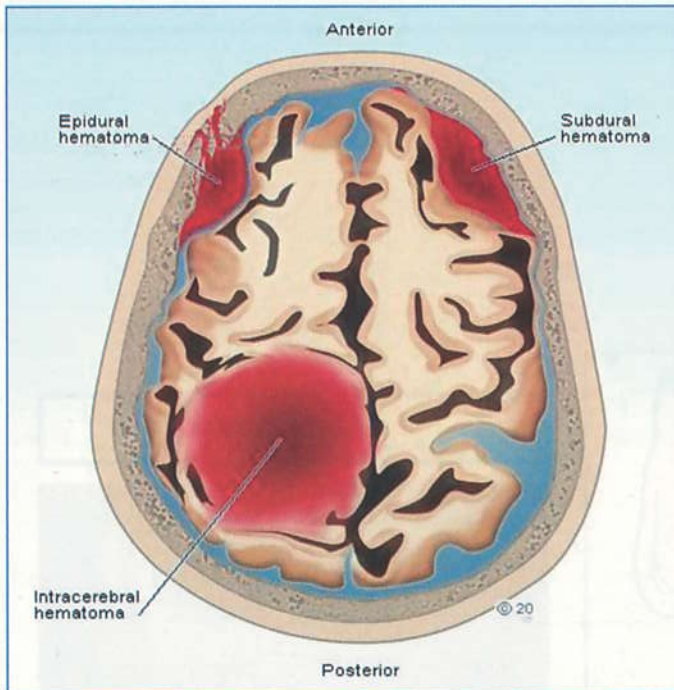


Craniotomy procedure

Traumatic disorders



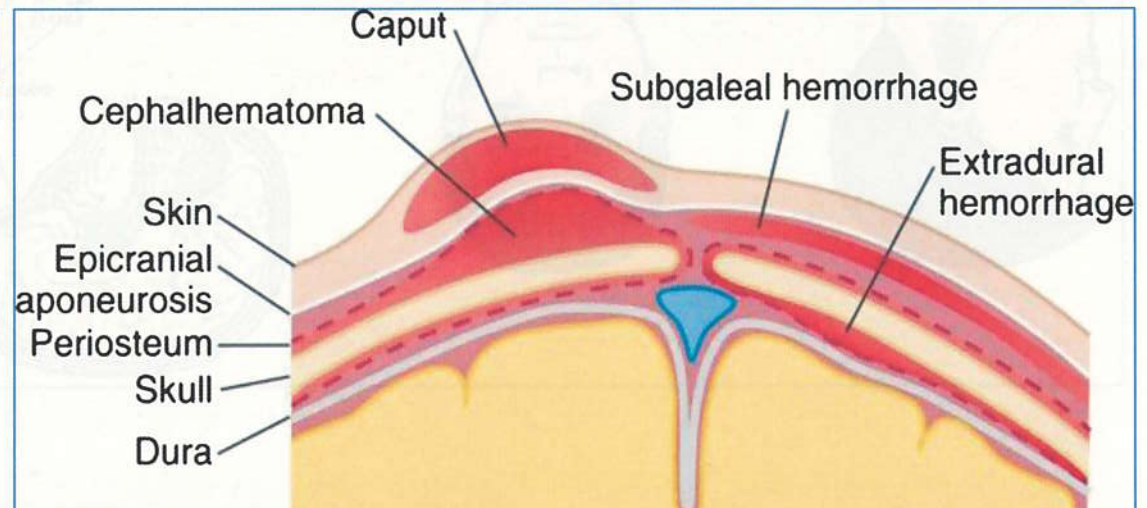
Layers of scalp

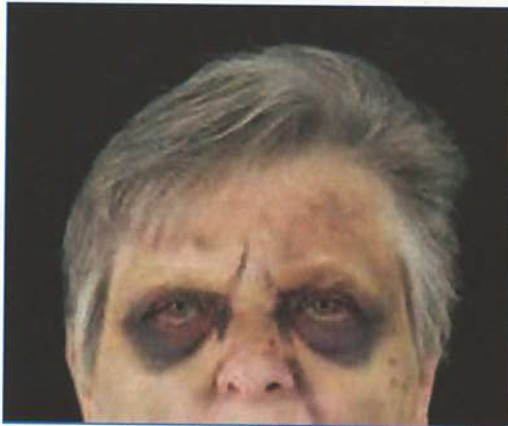


Brain hematoma

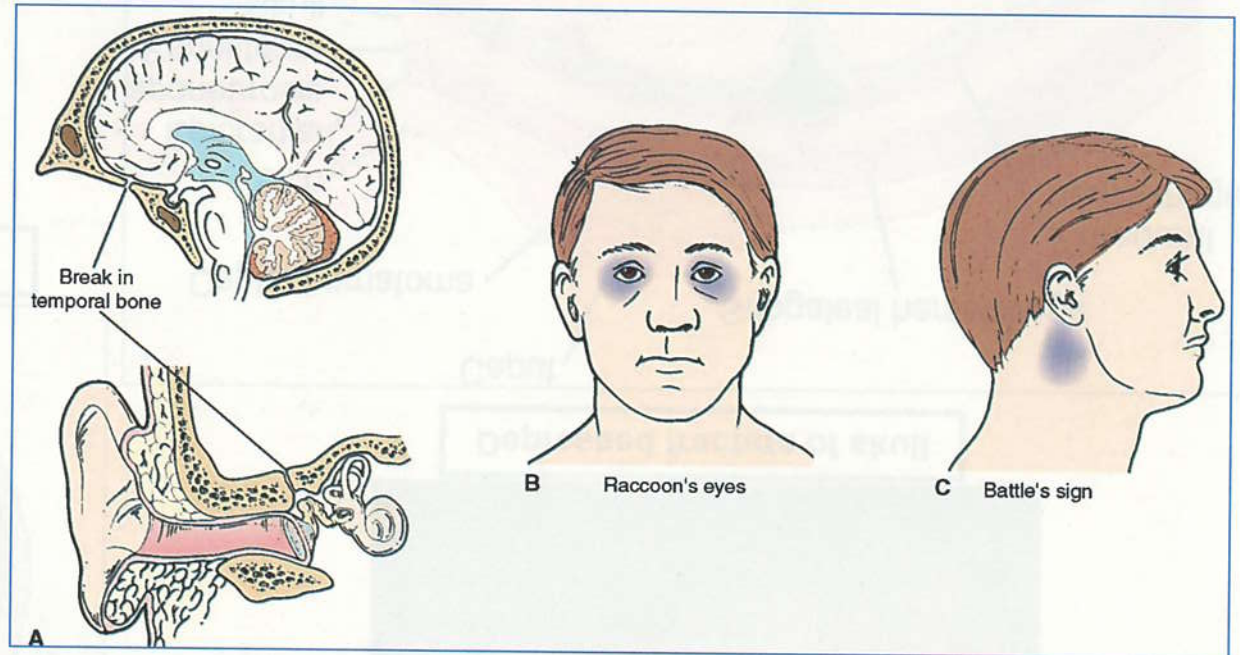


Depressed fracture of skull

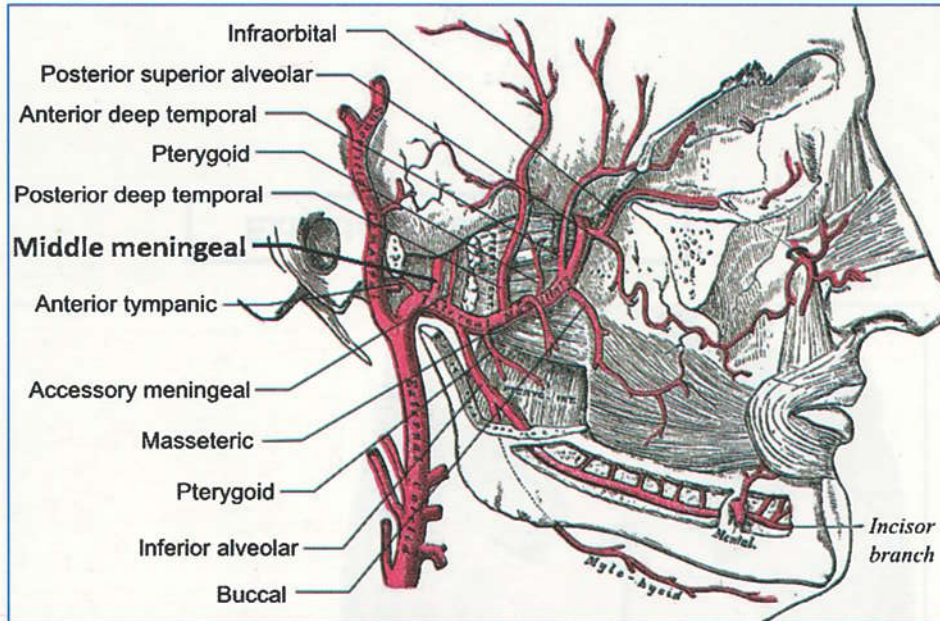




Raccon eye

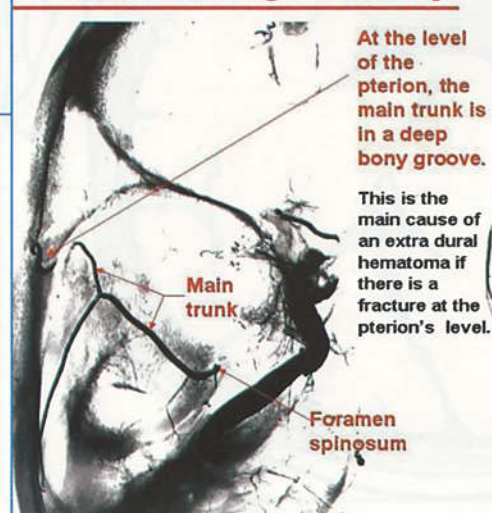


Intracranial hemorrhage

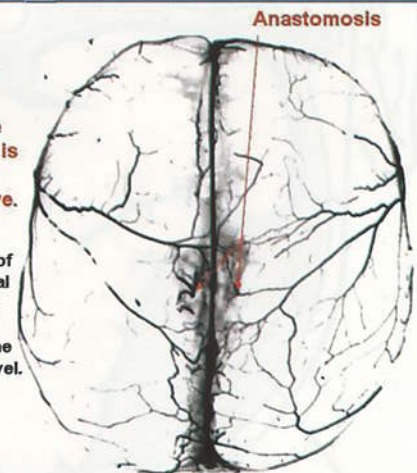


Middle meningeal artery

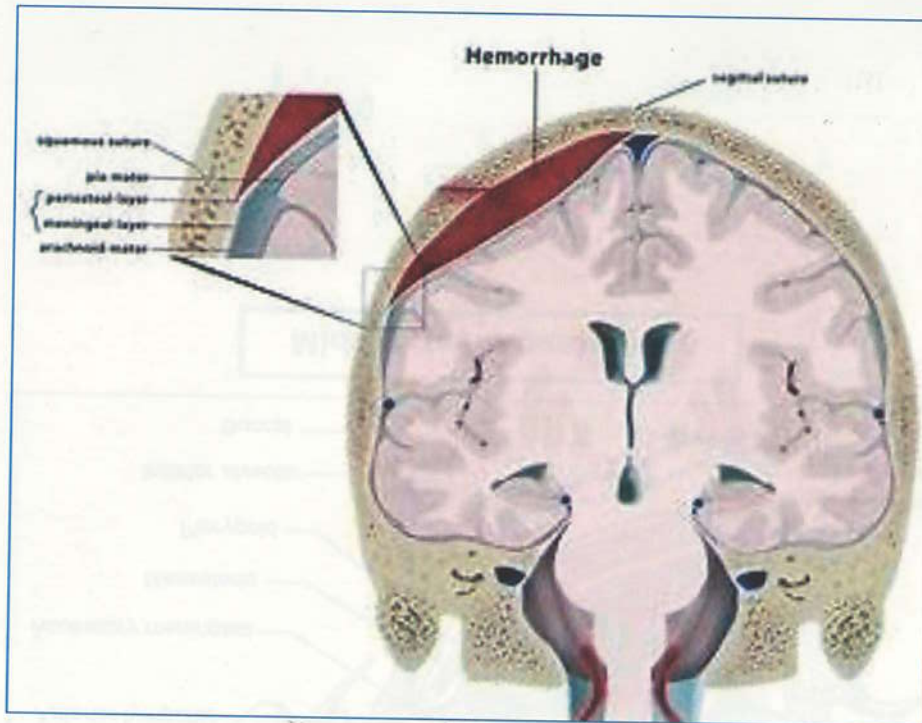
Middle Meningeal Artery



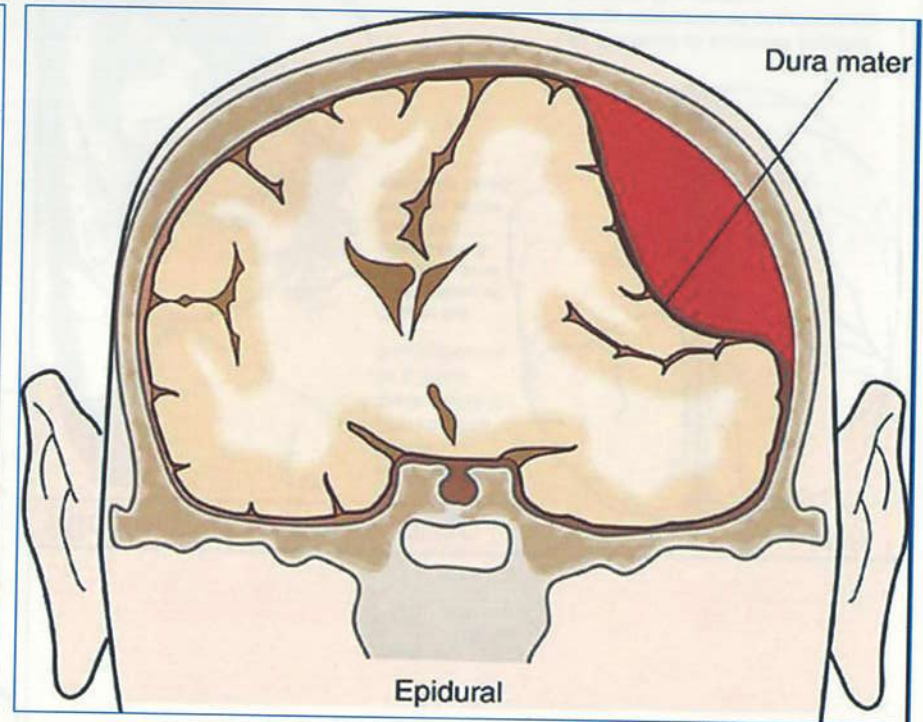
At the base of the skull.



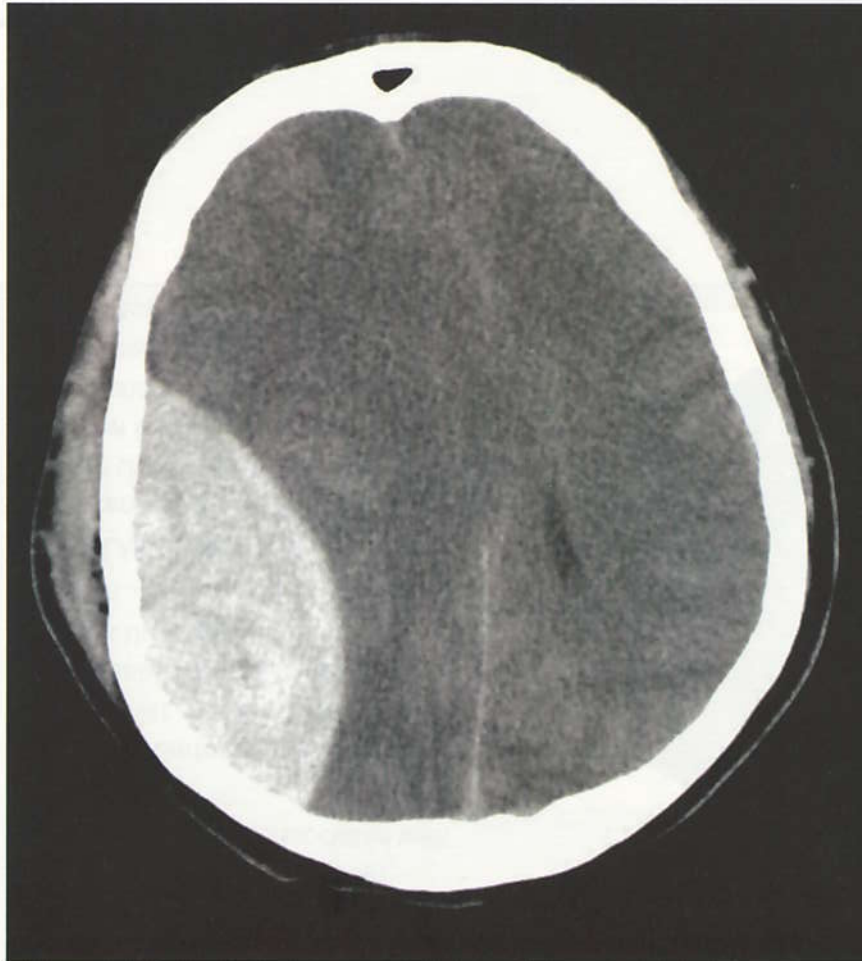
At the level of superior sagittal sinus existence of anastomosis through the midline



Extradural hemorrhage

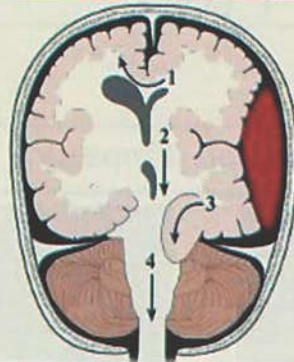


Epidural hemorrhage

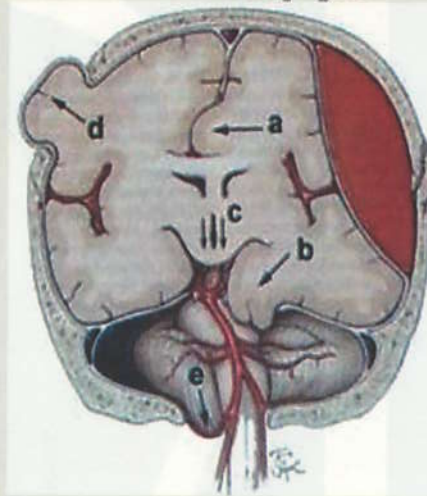


Extradural hemorrhage

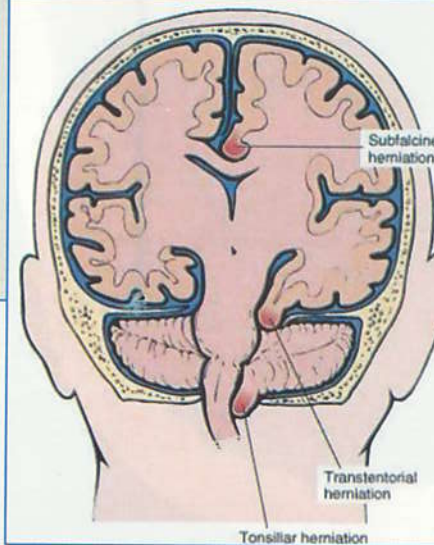
HERNIATION



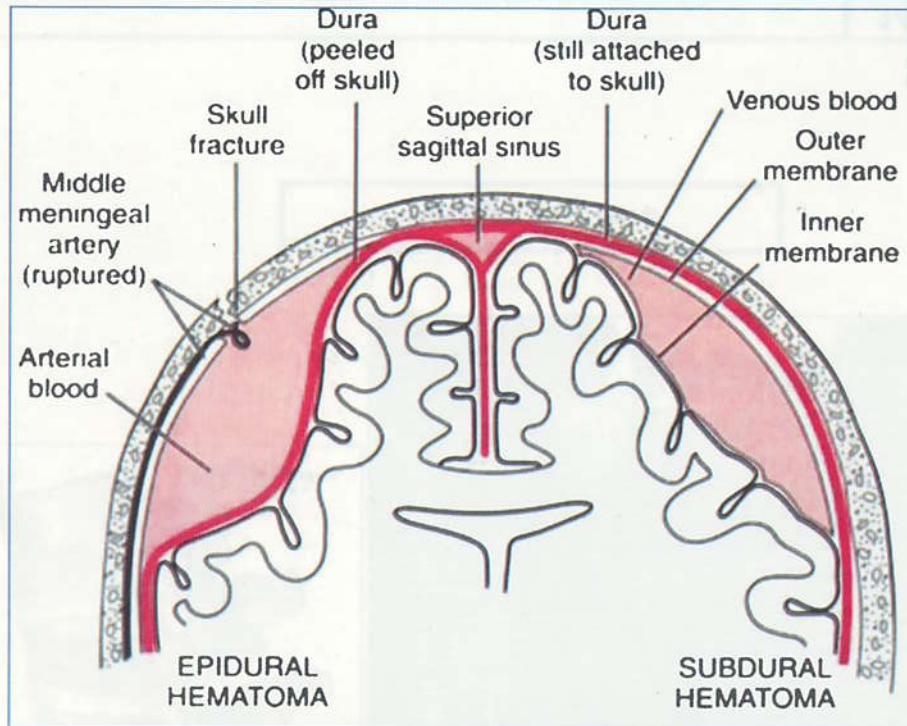
- **Central Herniation**- downward displacement of the brain stem caused by any lesion associated with increased ICP.
- Large supratentorial masses can result in bilat. Uncal herniation which will can cause central herniation to progress through the foramen magnum.
- **TONSILLAR HERNATION** is herniation of the cerebellar tonsils downward through the foramen magnum. This condition is associated with compression of the medulla and usually leads to respiratory arrest, blood pressure instability, and death.



Common CNS herniation



- **Subfalcine**: common, Headache contralateral leg weakness.
- **Transtentorial**: oculomotor (CN III) paresis (ipsilateral dilated pupil, abnormal EOM's), contralateral hemiparesis.
- **Tonsillar**: Obtundation.

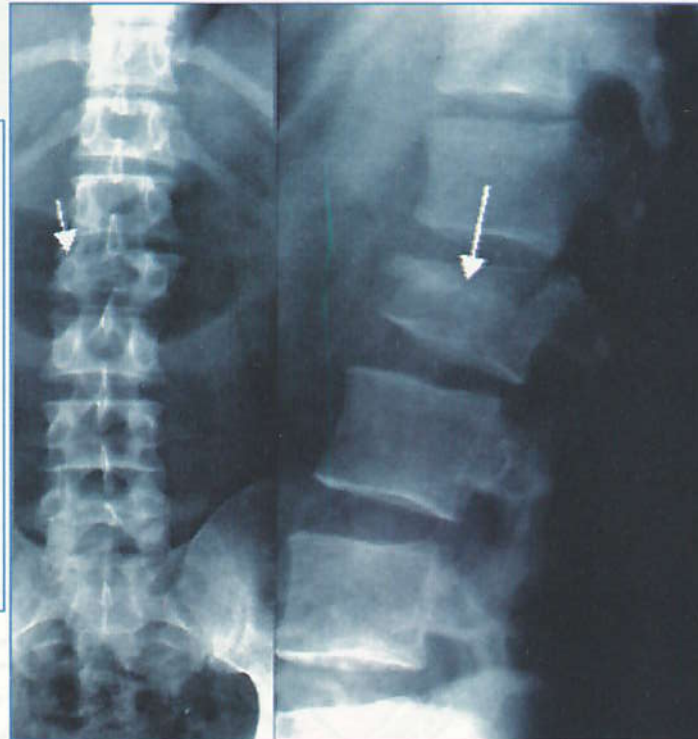


Classic trephining

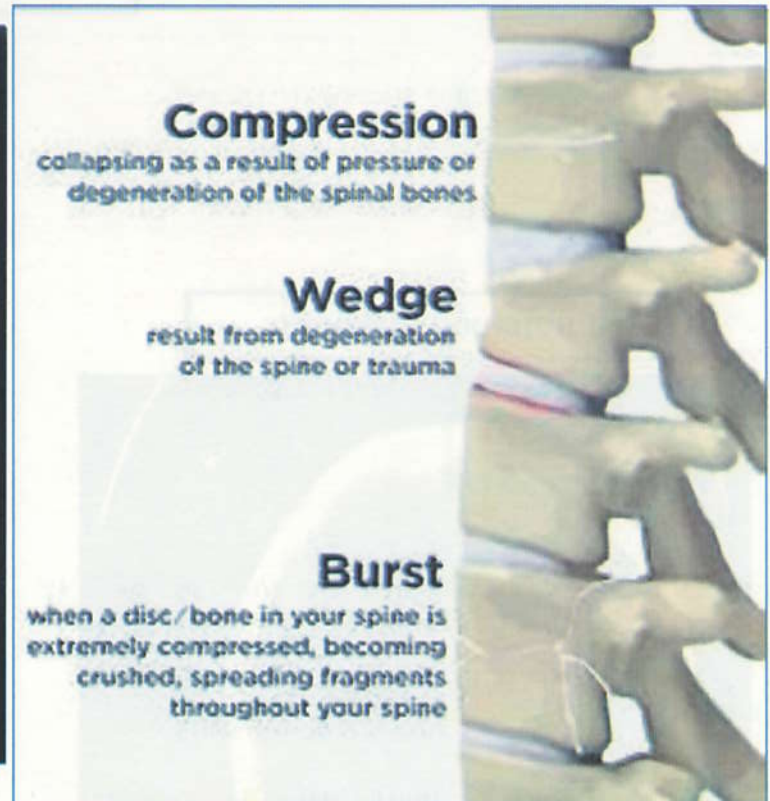


Subdural hematoma

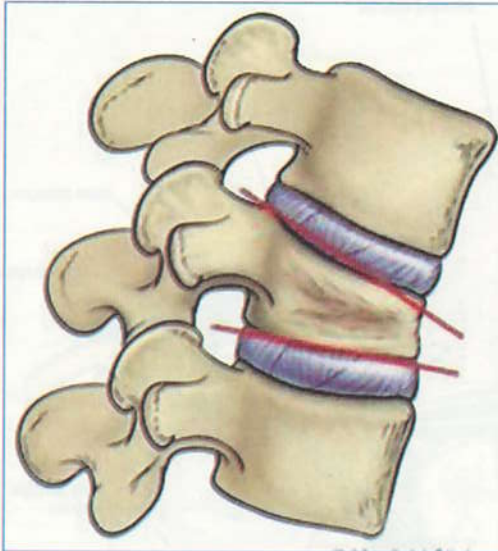
Fracture dislocation of spine



Wedge fracture

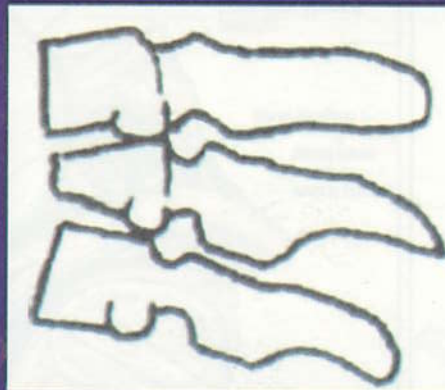


Types of spinal fractures



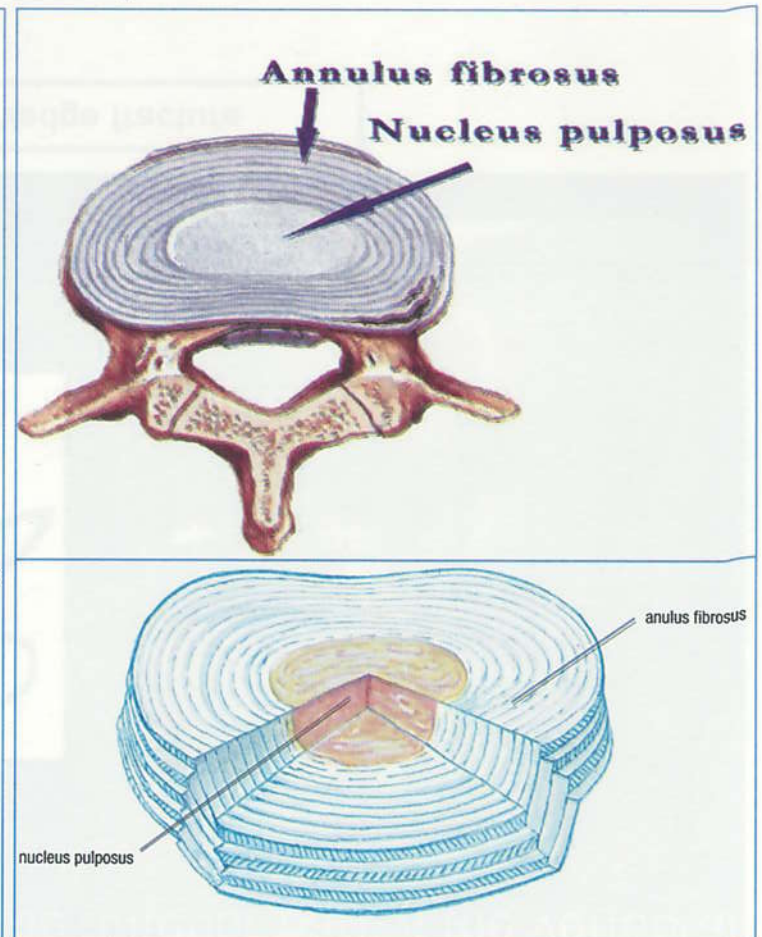
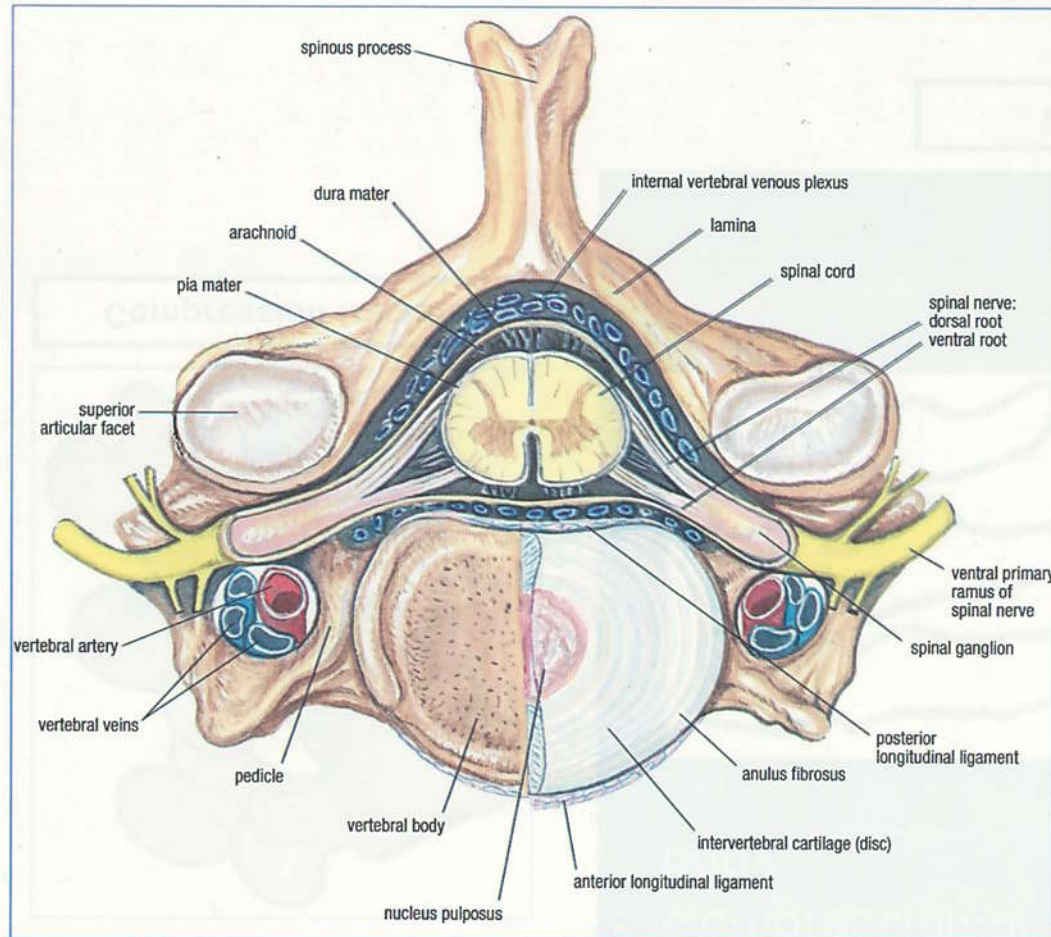
Compression fracture

- Due to flexion injury.
- Compression of the anterior part of the vertebral body.



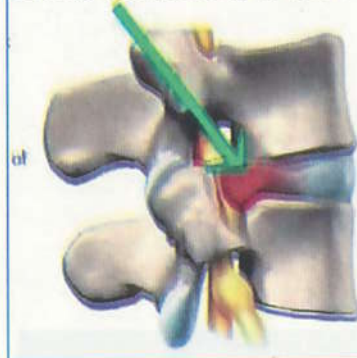
Wedge fracture

Degenerative Disorders



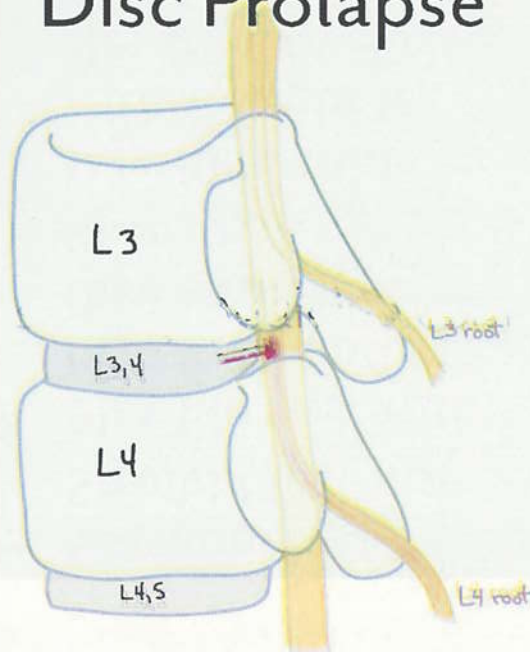
Vertebral & Intervertebral disc anatomy

Bulging disc pressing on nerve



Disc prolapse

Disc Prolapse



- Most common sign or symptom is pain.

Pain located in the buttock that radiates down the back of the thigh and possible the calf.

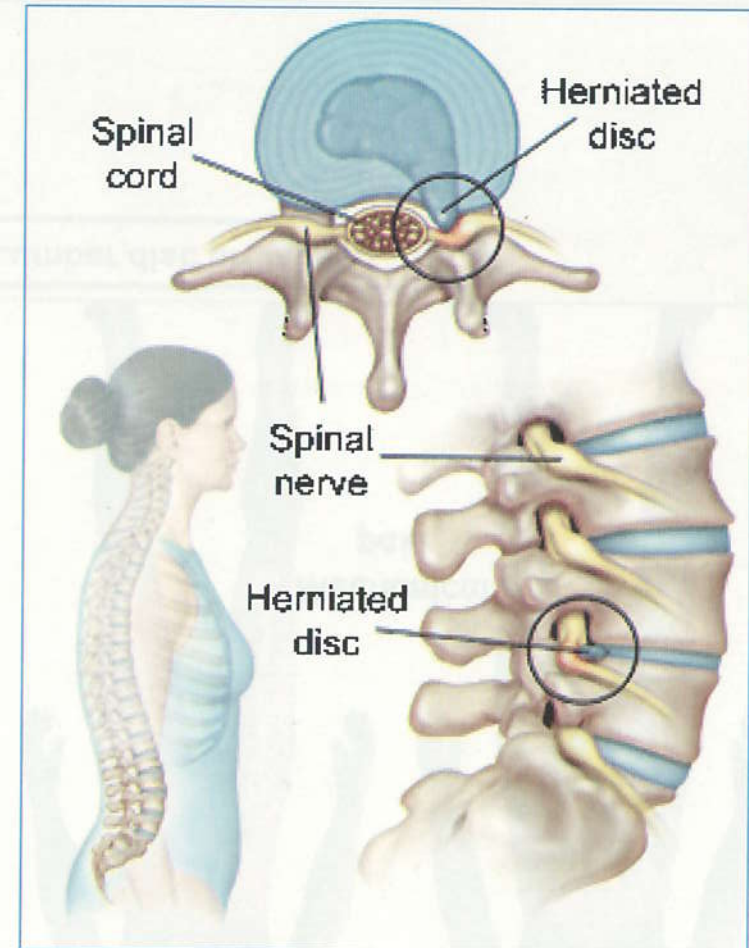


Lumbar disc prolapsed

- **Variation of Straight leg raise**
- **Flex hip first with bent knee and then straighten knee or...**
- **Dorsiflex ankle with straight leg elevation to elicit increased pain**



Lasègue sign



Disc herniation

Cauda Equina Syndrome

HISTORY

Risk factors

trauma, surgery, anticoagulant
cancer, immunocompromised

Pain:

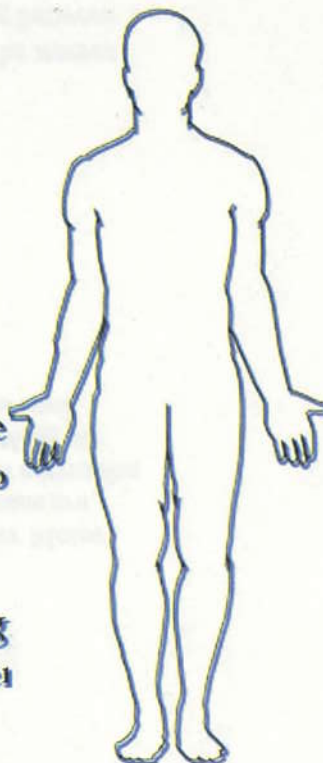
severe, bilateral radiculopathy
multiple visits

Numb:

perianal: numb when wiping
sexual: numb during intercourse
bladder: altered bladder sensatio

Weak:

bowel: fecal incontinence
bladder: reduced flow/emptying
(overflow) urinary incontinence
sexual: erectile dysfunction
lower extremities: leg weakness



PHYSICAL

Sensory

perianal sensory loss

Motor

rectal tone reduced
lower extremity weakness

Bladder test

high post-void residual
reduced trigone sensation
(when pulling on foley)

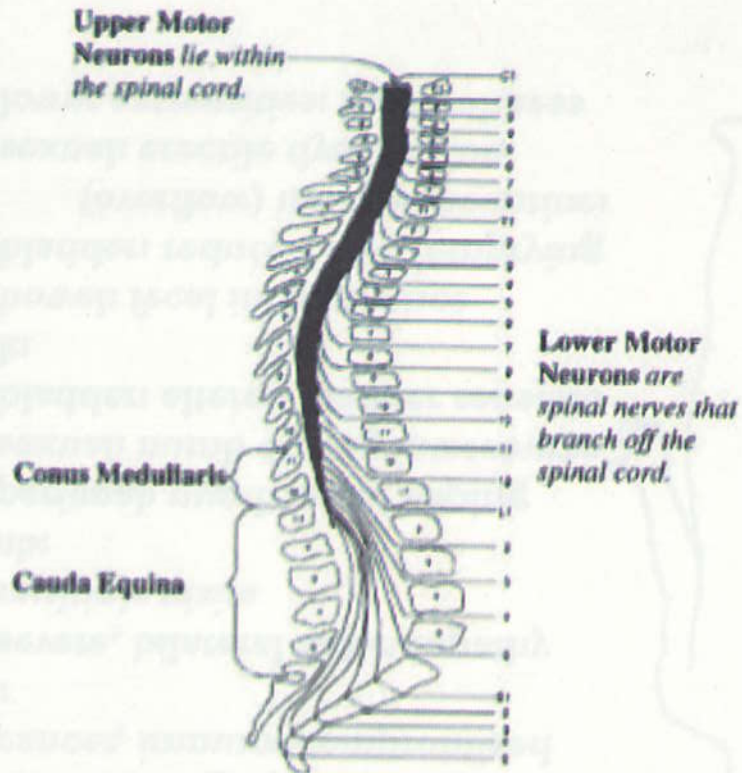
STRATIFY/MRI

CES-Suspect: bilateral pain
surgery prevent losses

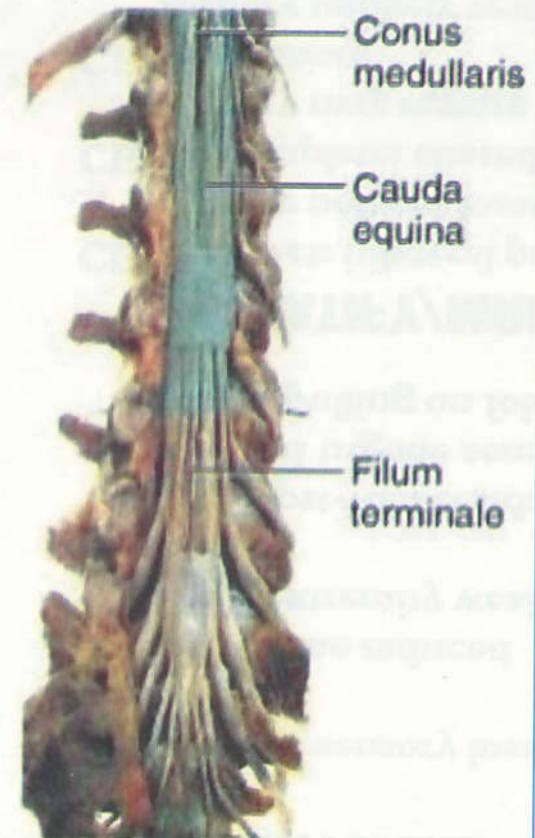
CES-Incomplete: altered
surgery may restore losses

CES-Retention:
surgery unlikely restore

CES-Complete: irreversible

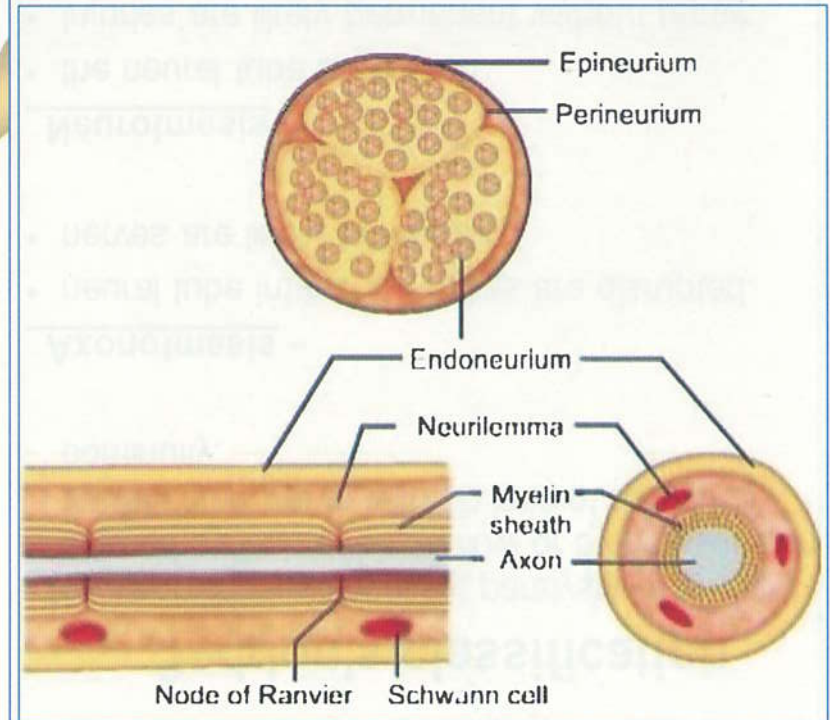
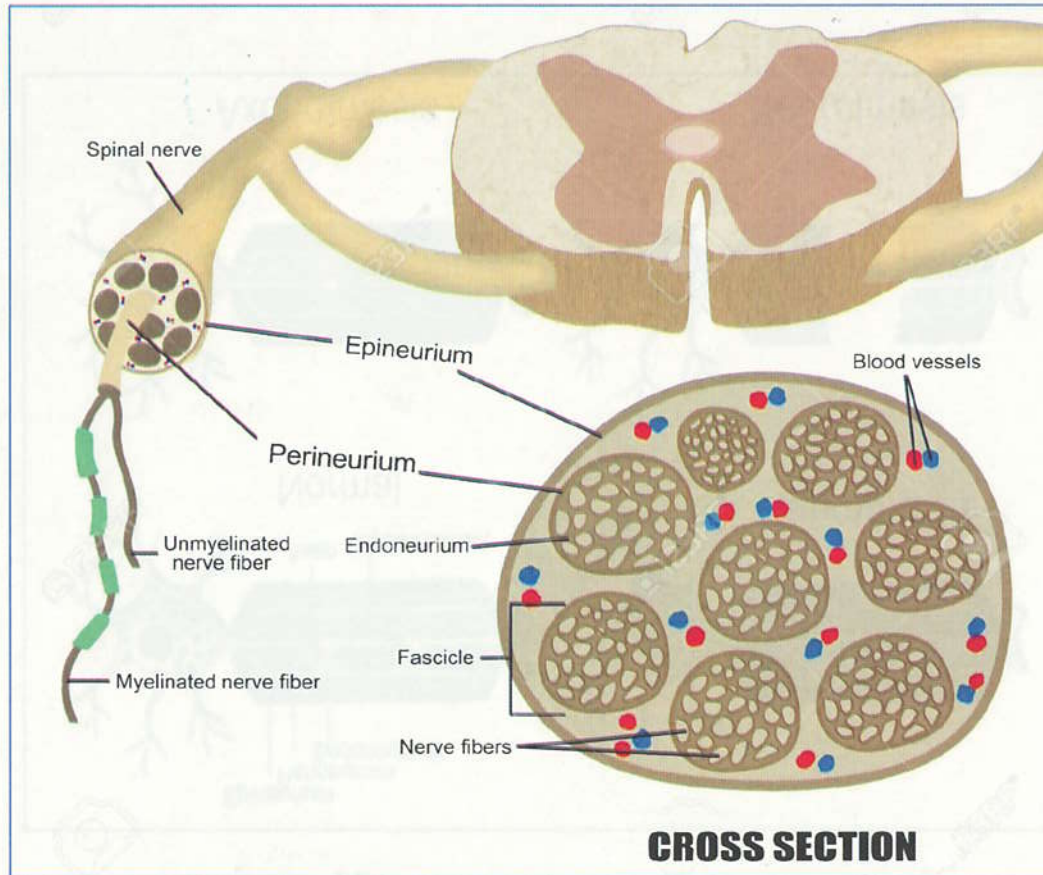
Figure C

The spinal cord ends between L-1 and L-2. The nerves continue to descend in the spinal column, exiting between the vertebrae and through the sacrum.

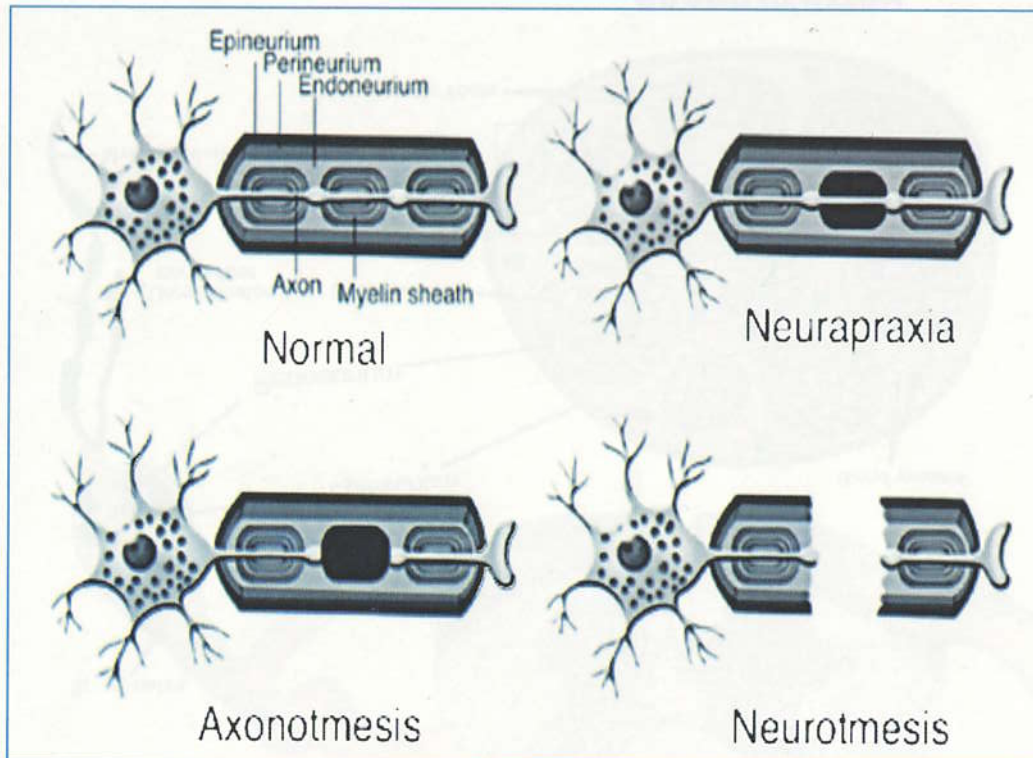


Nerve

Anatomy of a nerve



Types of nerve injury



Seddon's classification

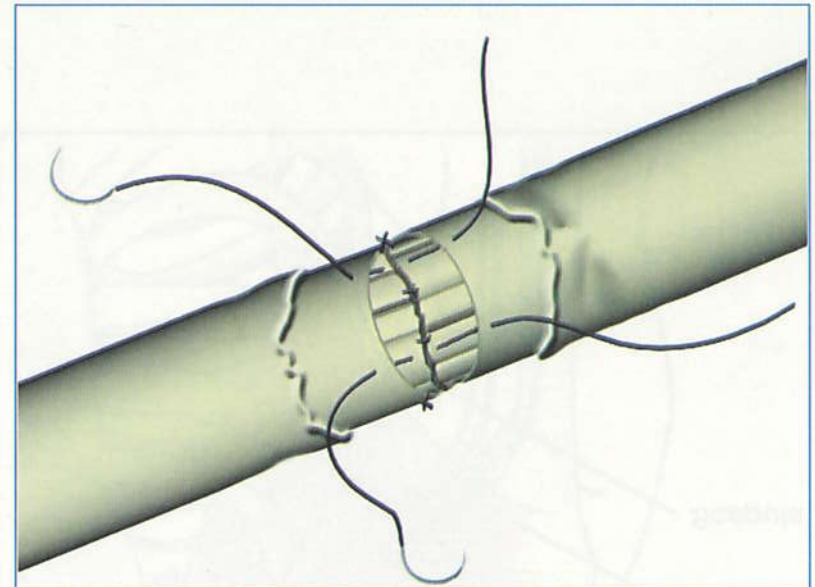
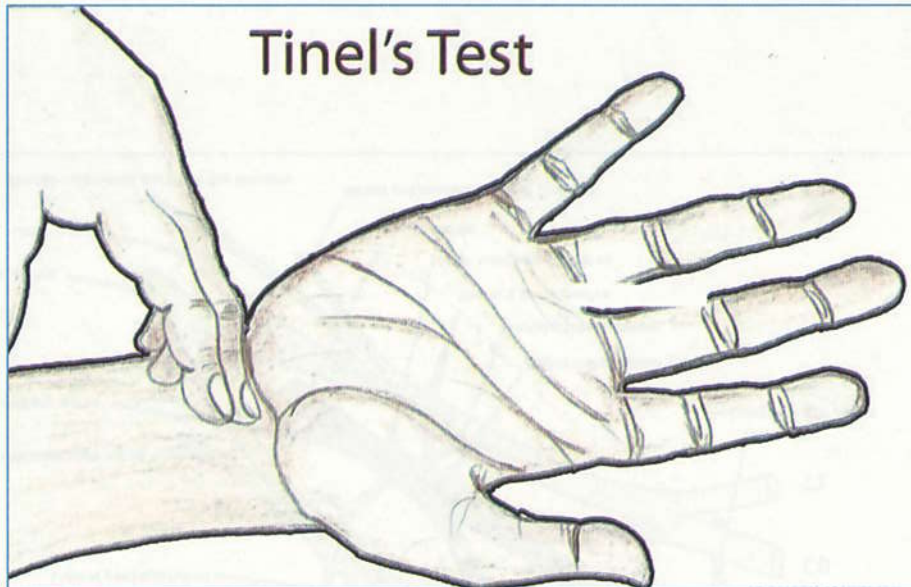
Neurapraxia -- **temporary paralysis** of a nerve caused by lack of blood flow or by pressure on the affected nerve with **no loss** of structural continuity.

Axonotmesis –

- neural tube intact, but **axons are disrupted**.
- nerves are likely to recover.

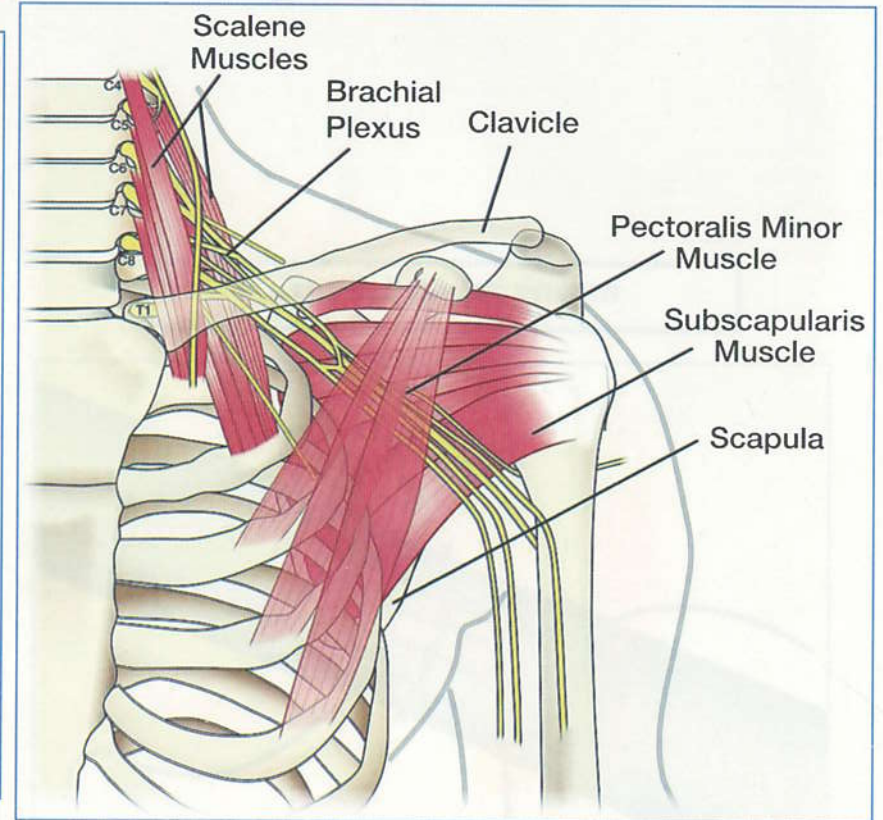
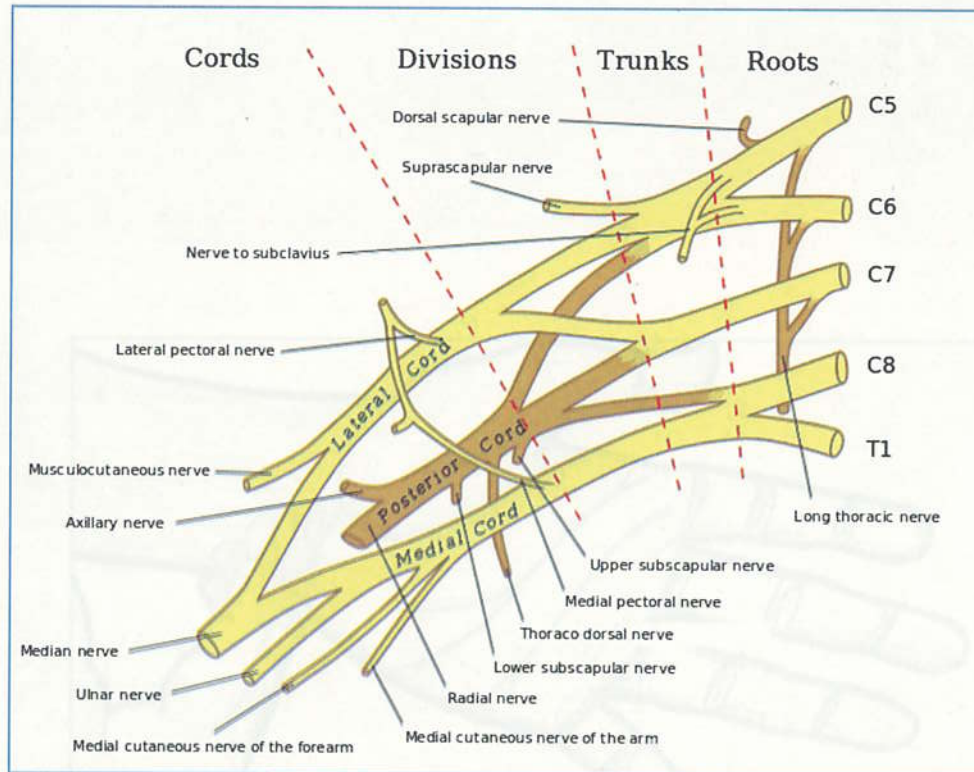
Neurotmesis –

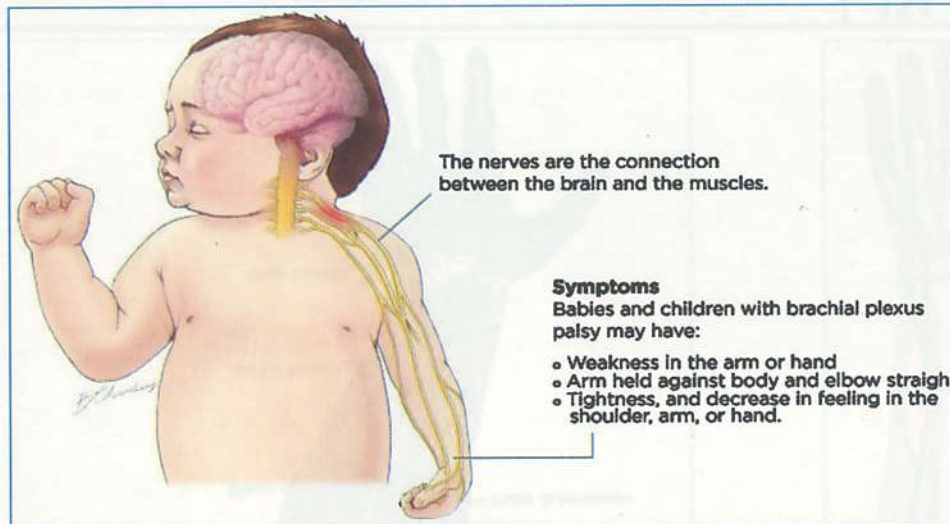
- the neural tube is severed.
- Injuries are likely **permanent without repair**.



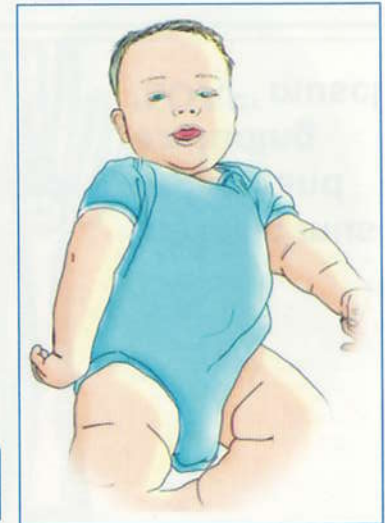
Primary nerve suture

Brachial plexus





Erb's palsy

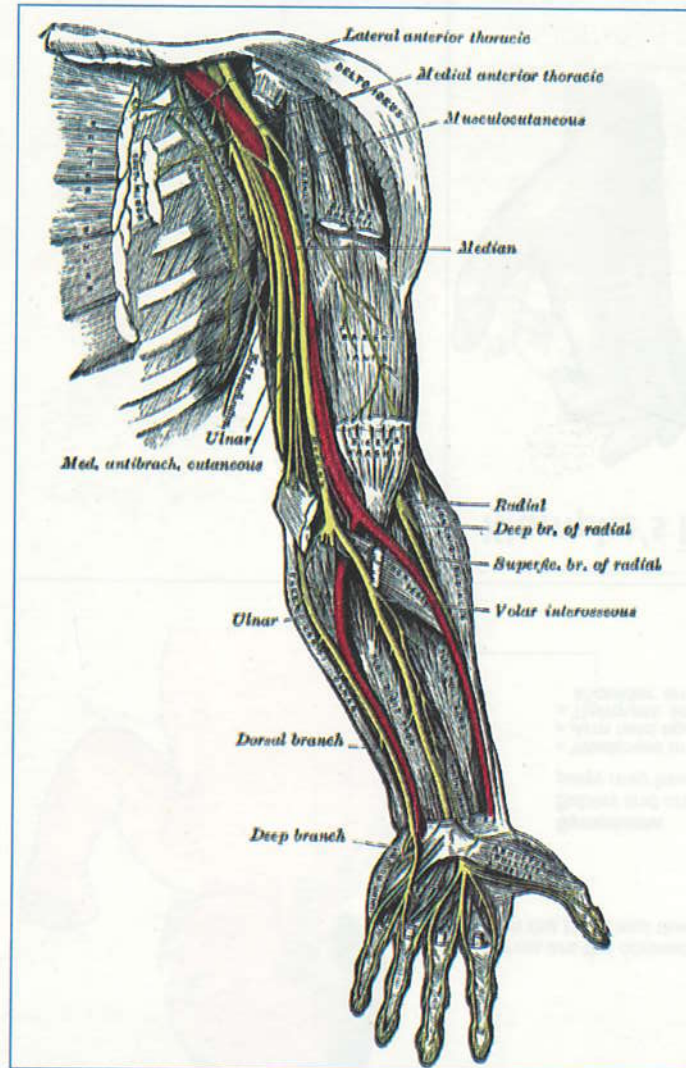


Klumpke's Palsy or Dejerine-Klumpke palsy



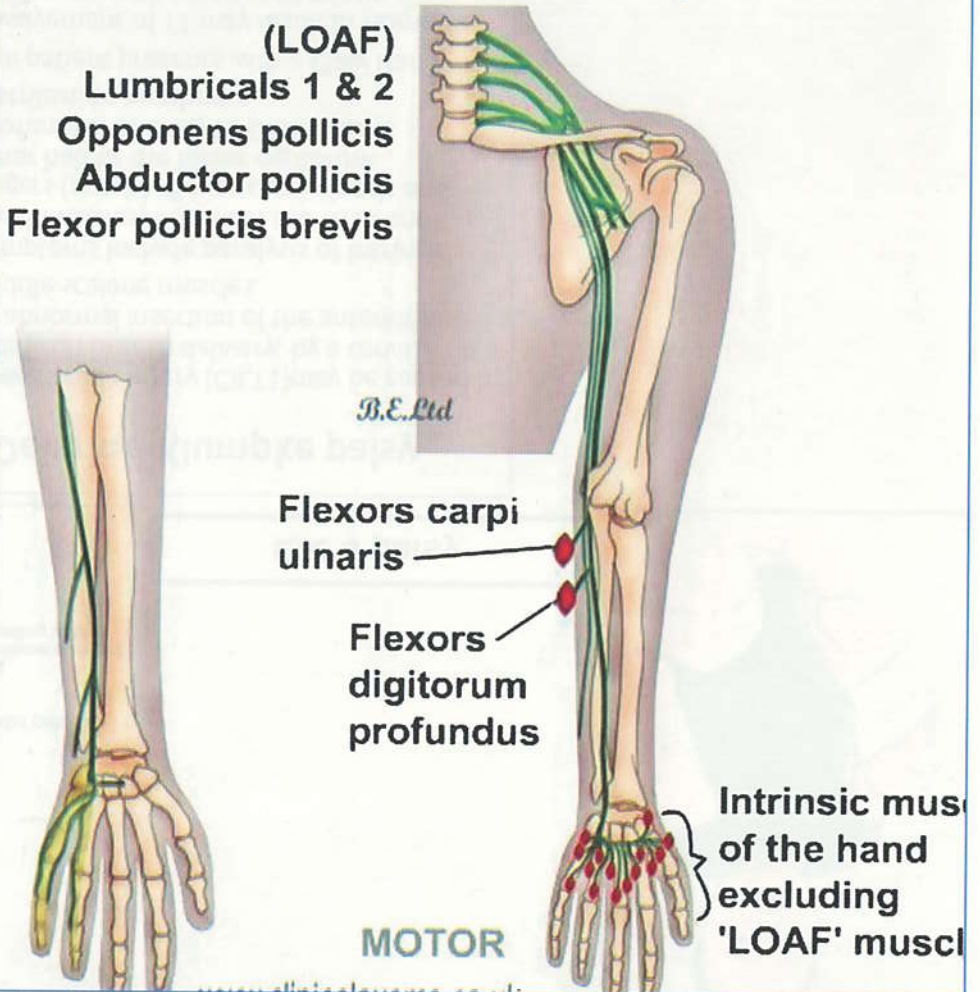
- **Lower trunk injury (C8,T1)** may be caused by a difficult breech delivery, by a cervical rib or abnormal insertion of the anterior and middle scalene muscles.
- Symptoms include **paralysis of intrinsic hand muscles**, flexors of the wrist and fingers (notably **flexor carpi ulnaris** and **ulnar half of the flexor digitorum profundus**) and **C8/T1 Dermatome distribution numbness**.
- The patient presents with a **Claw Hand**.
- Involvement of T1 may result in **Horner's syndrome**, with ptosis, and miosis. Weakness or lack of ability to use specific muscles of the shoulder or arm.

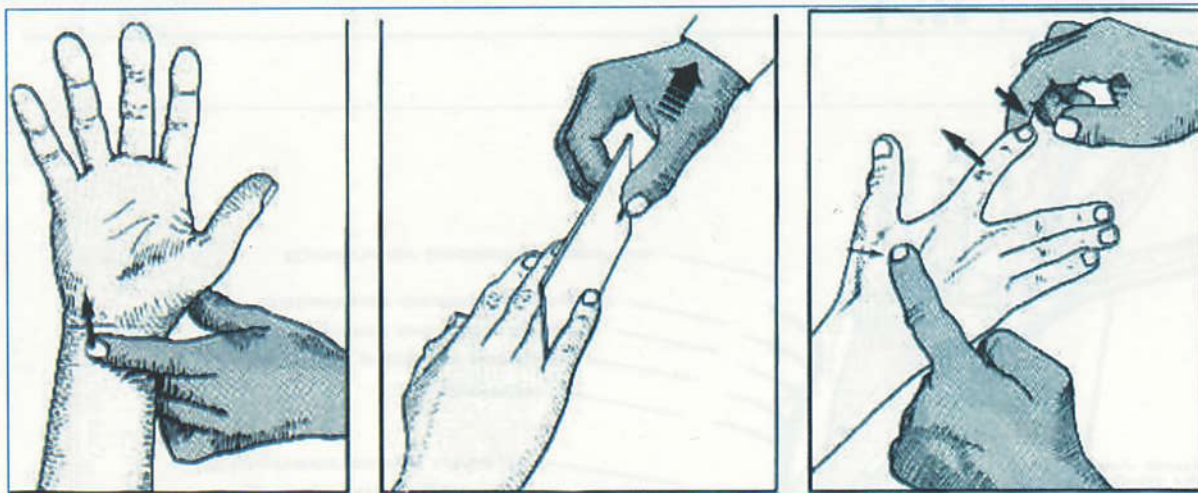
Ulnar nerve



Ulnar nerve (C8, T1)

(LOAF)
 Lumbricals 1 & 2
 Opponens pollicis
 Abductor pollicis
 Flexor pollicis brevis

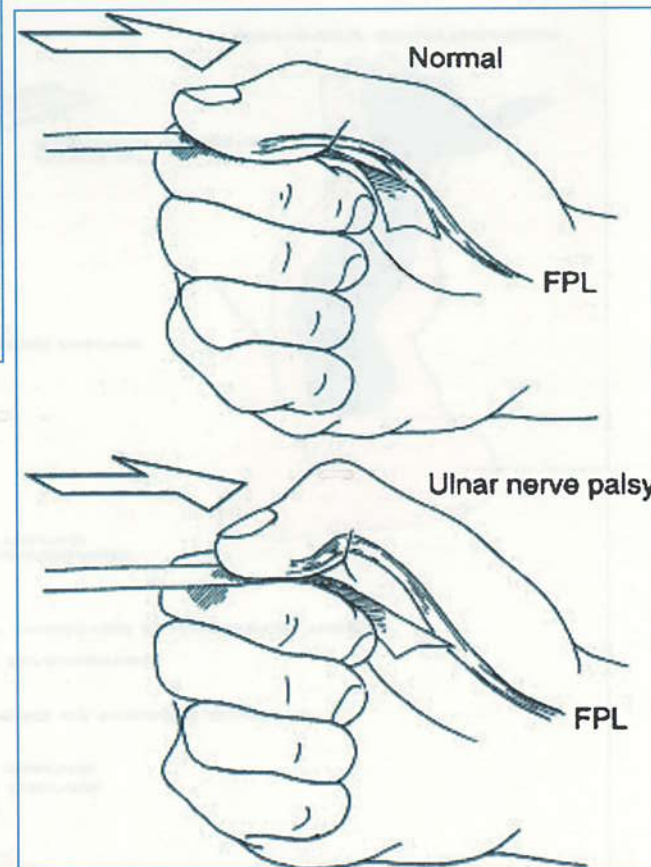




Cardboard test

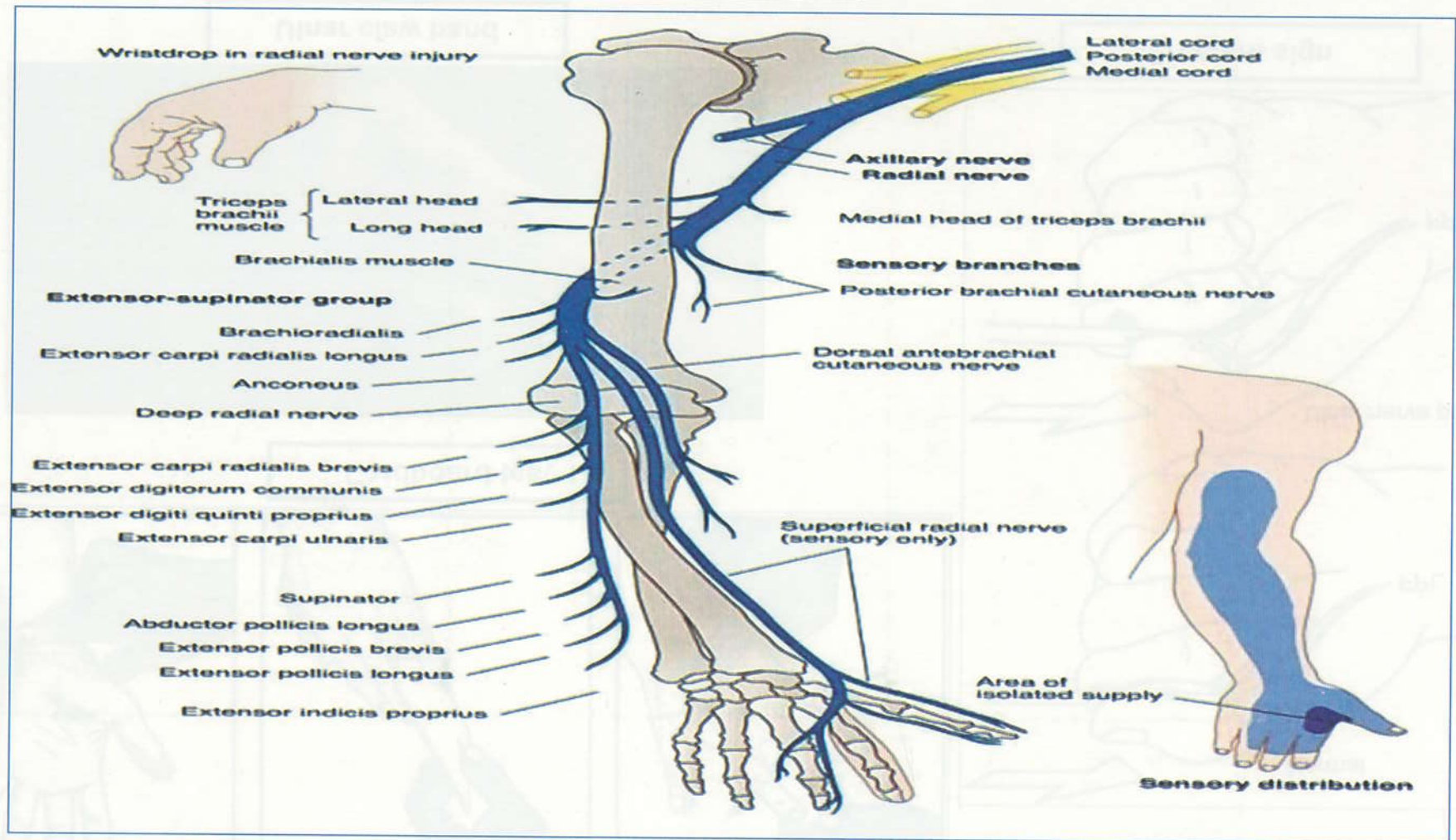


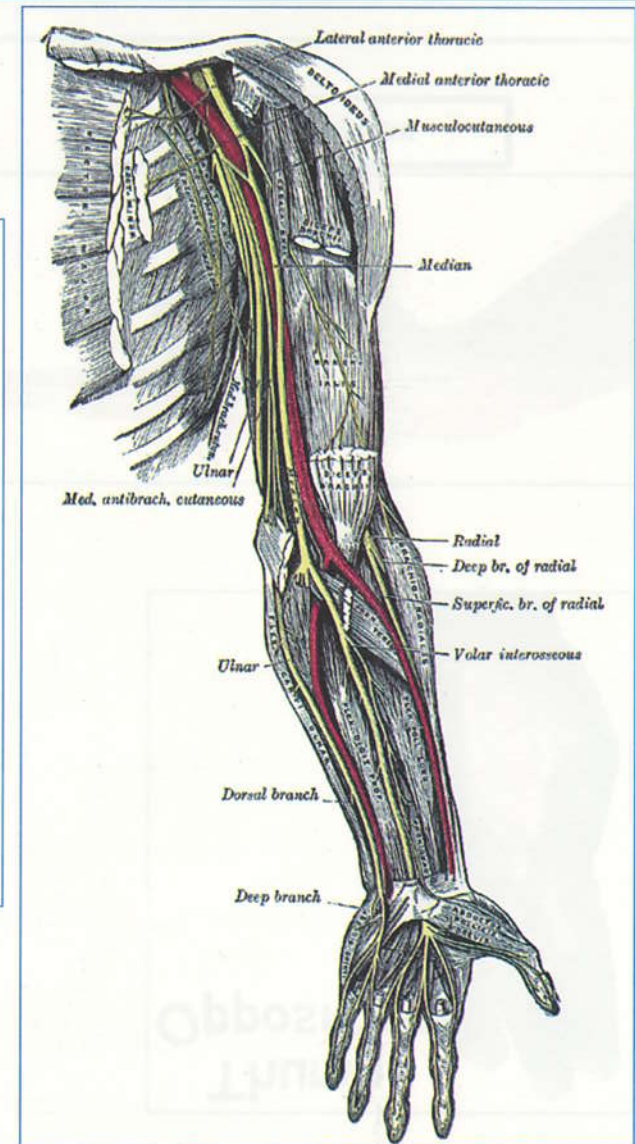
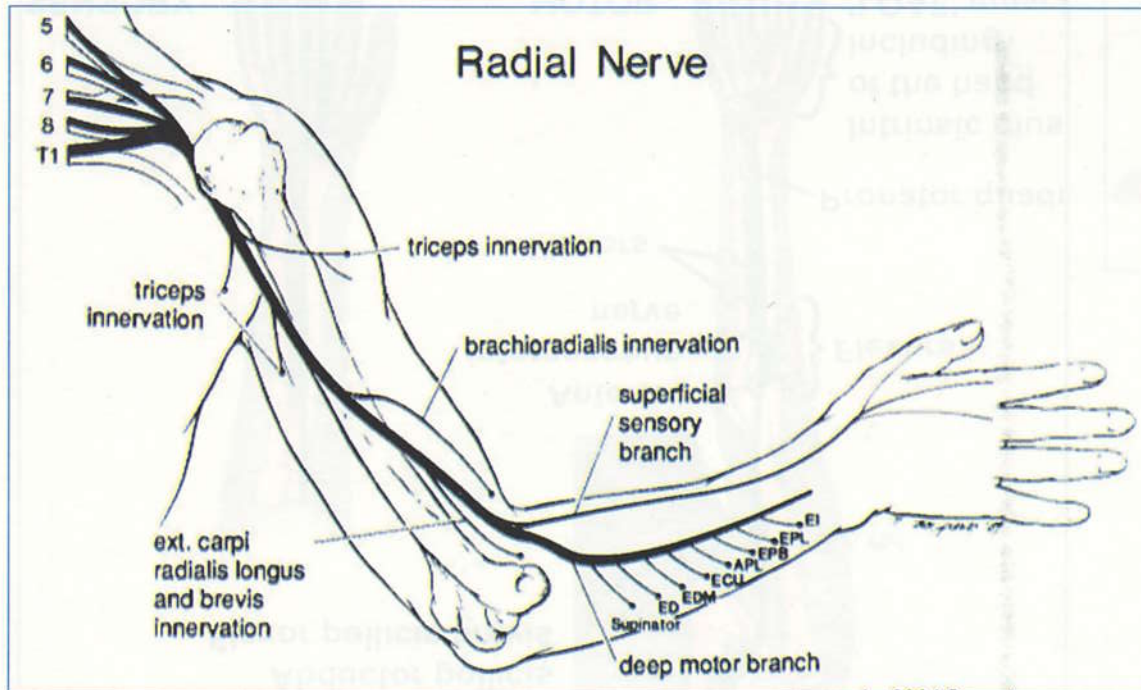
Ulnar claw hand



Froment sign

Radial nerve

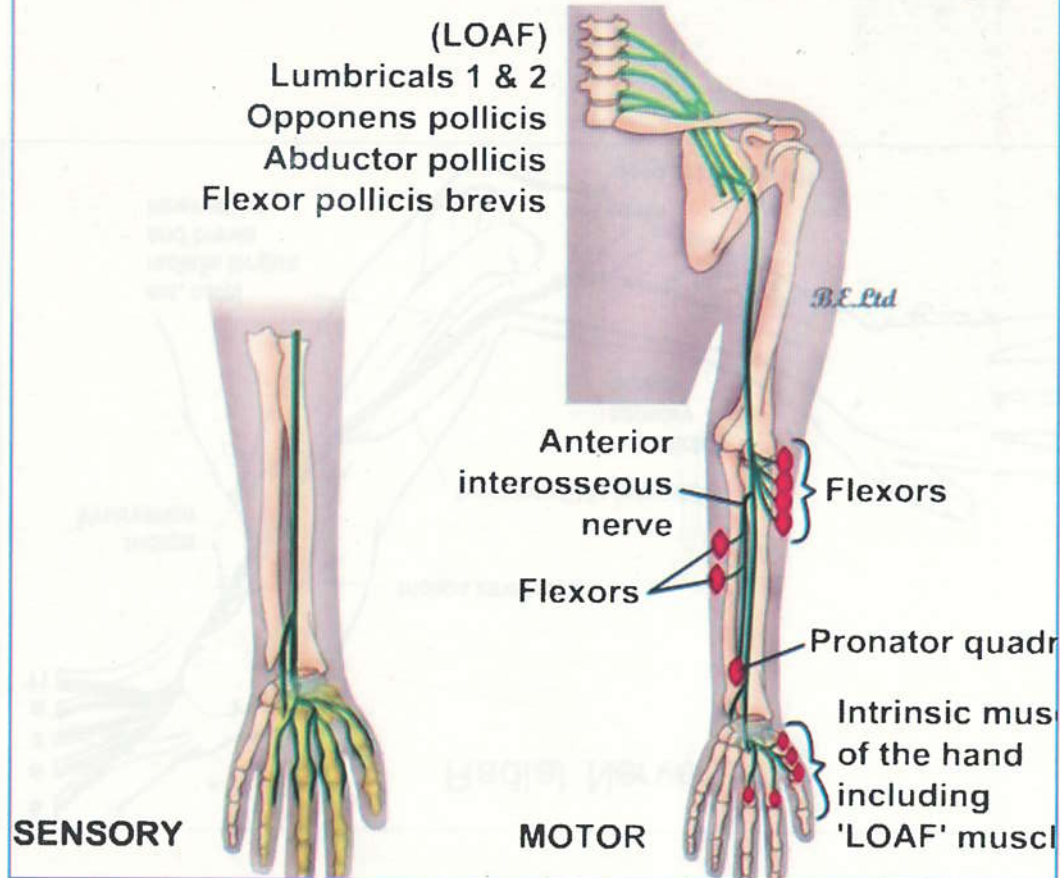




Median nerve

Median nerve (C5, C6, C7, C8, T1)

(LOAF)
Lumbricals 1 & 2
Opponens pollicis
Abductor pollicis
Flexor pollicis brevis



Thumb Opposition

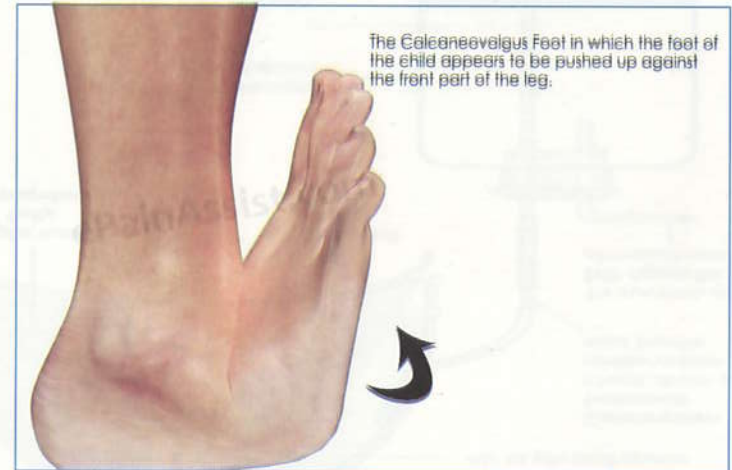


Pointing index

Lower limb



Talipes equino varus



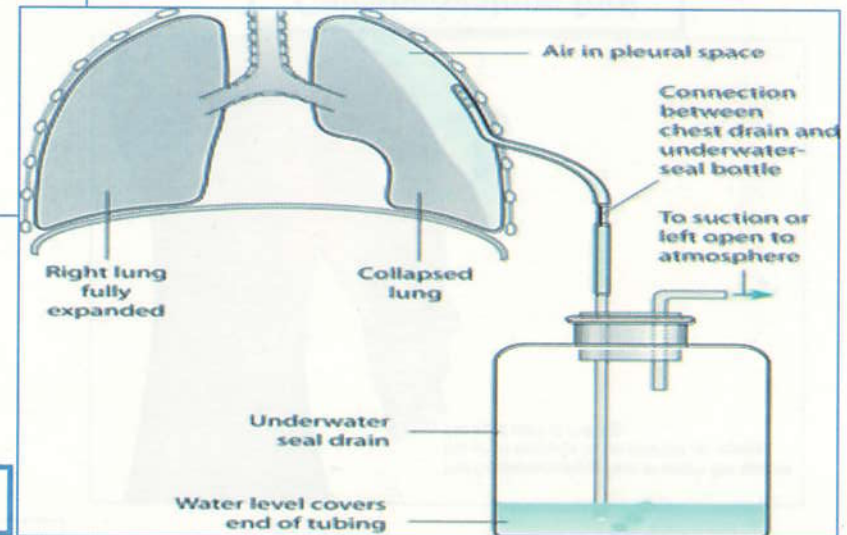
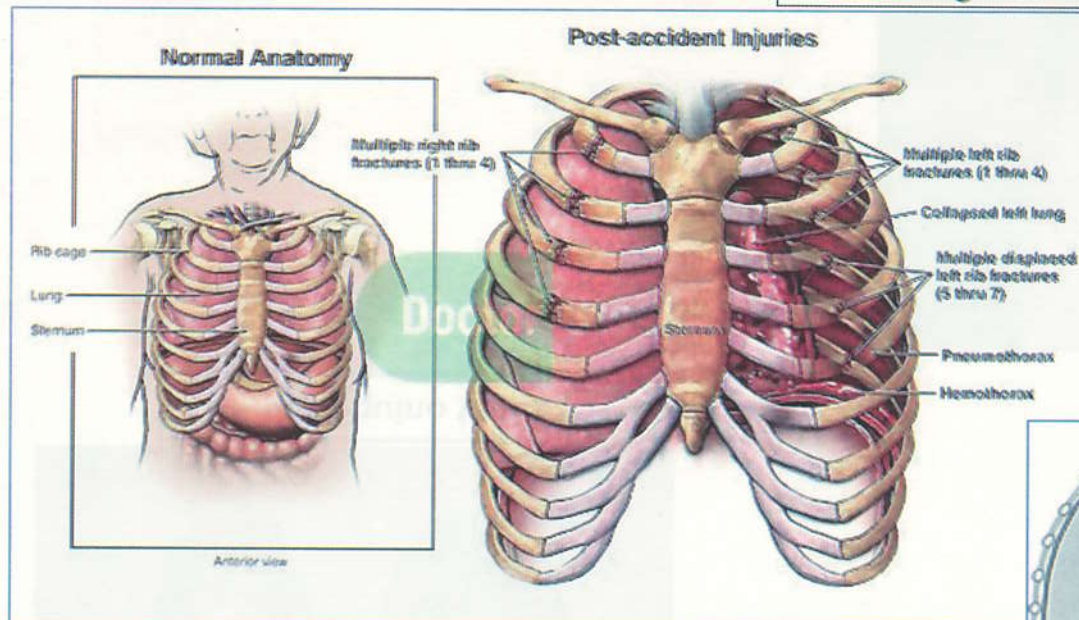
Calcaneovalgus foot



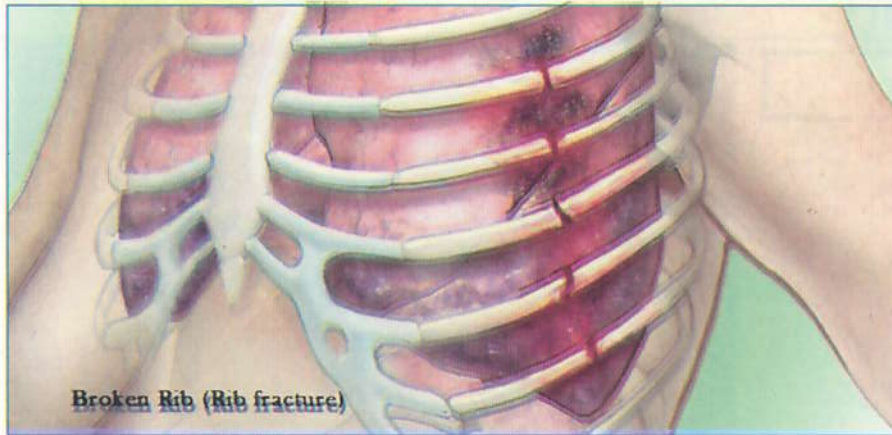
Pes planus (talipes calcaneovalgus).

Cardiothoracic Surgery

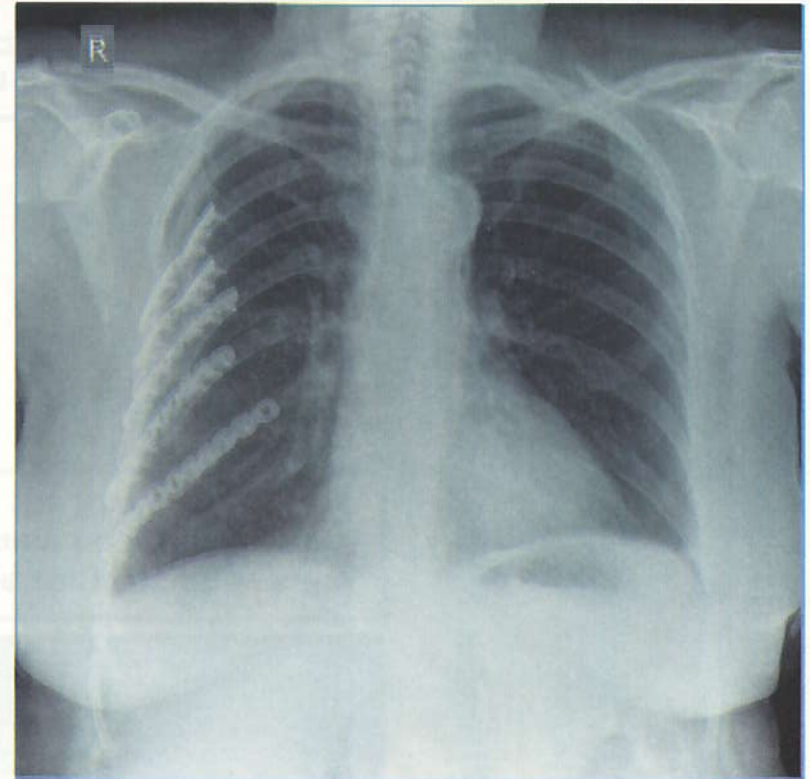
Chest injuries



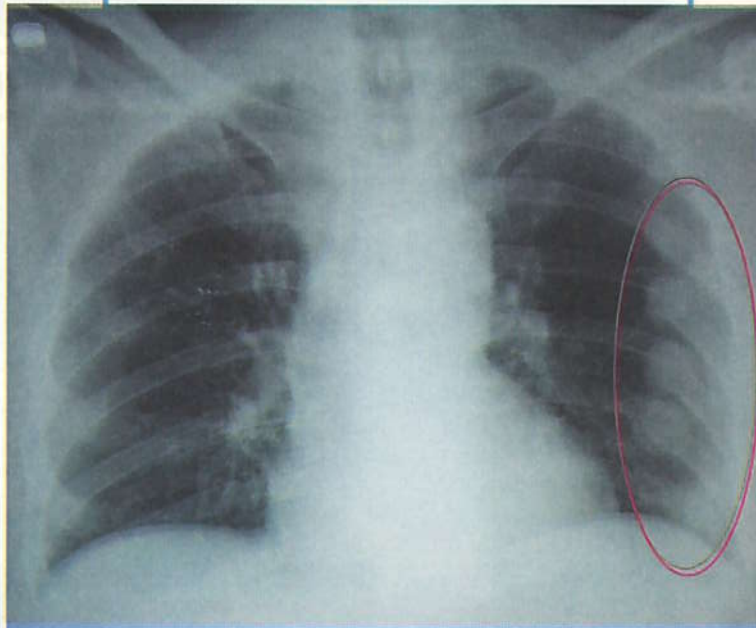
Under water seal



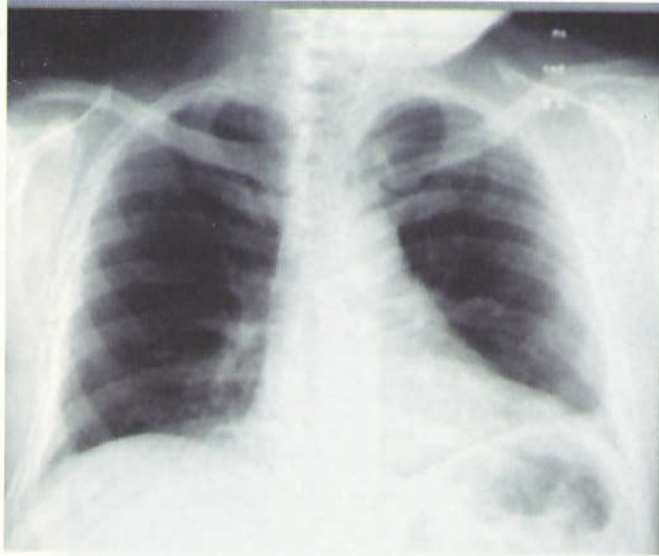
Rib fracture



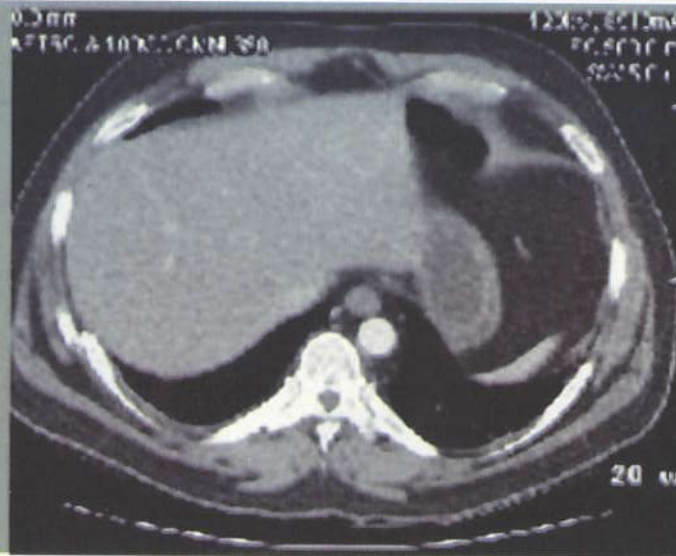
ORIF of fracture ribs



Fracture ribs

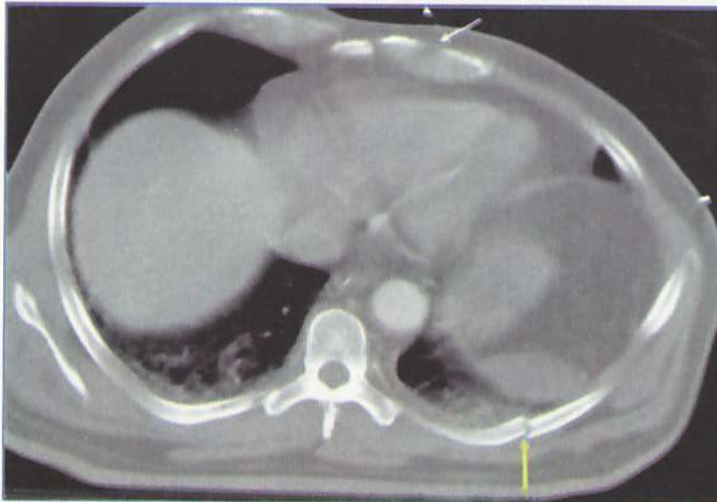


Plain x-ray film of Rt. 9th rib fracture

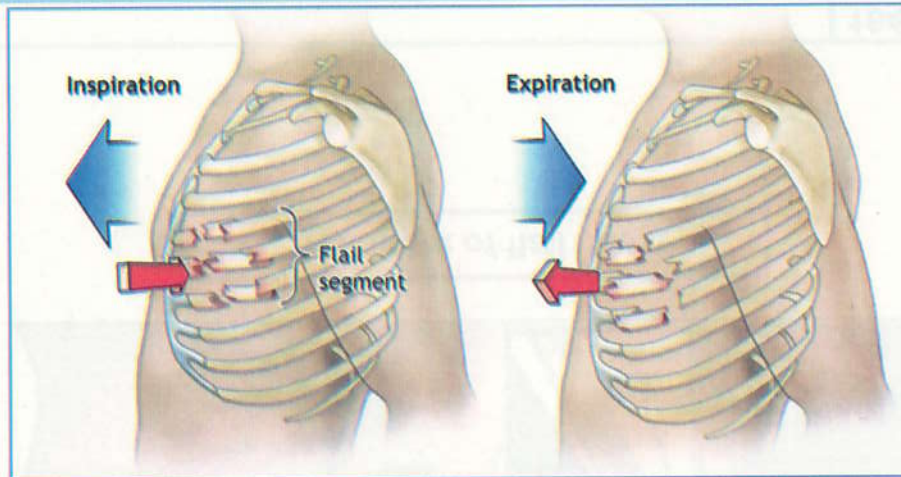


Isolated rib fracture

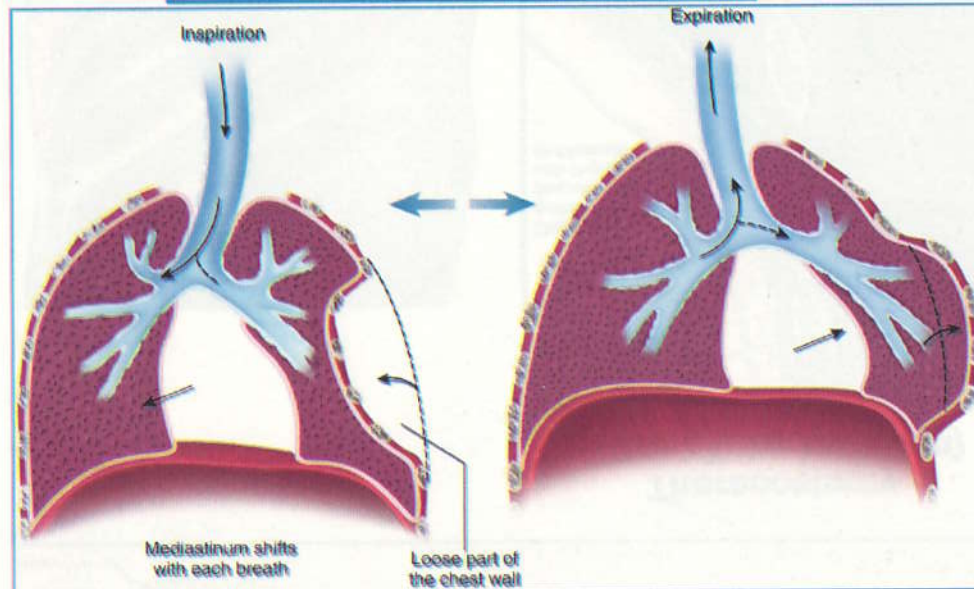
CT scan of the same pt. shows the rib displacement near the liver on the Rt.



CT scan fracture rib



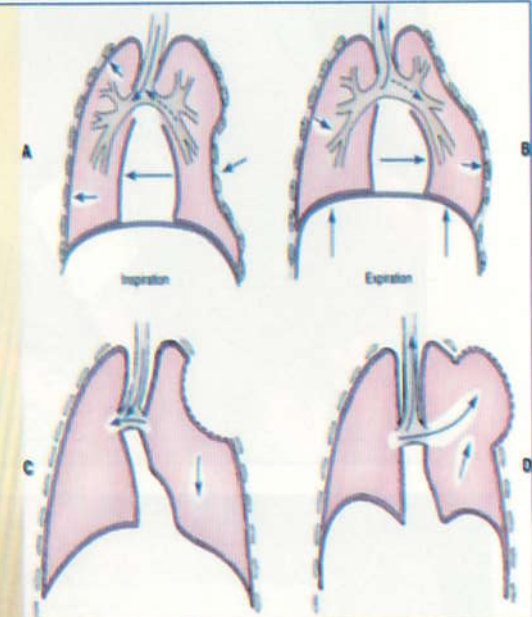
Flail chest



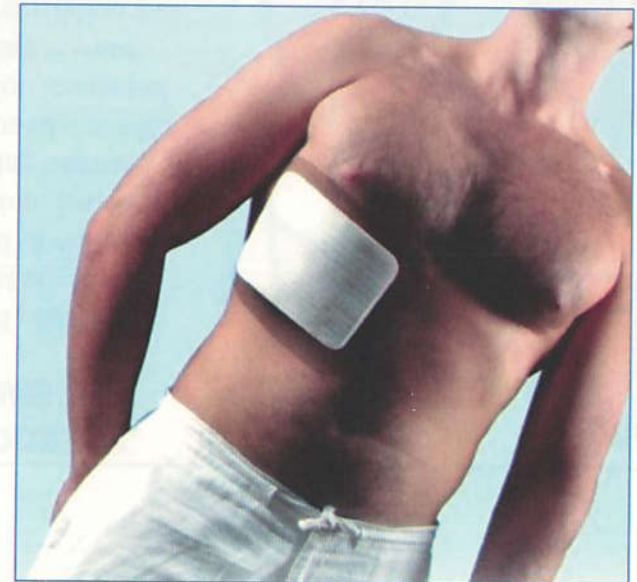
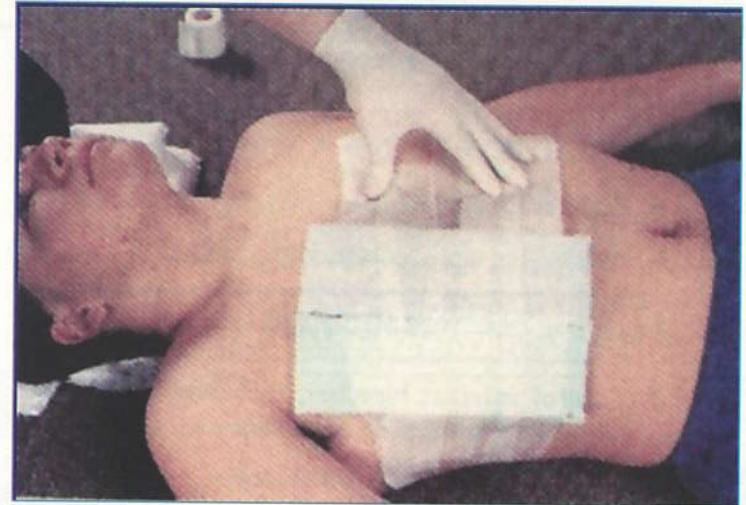
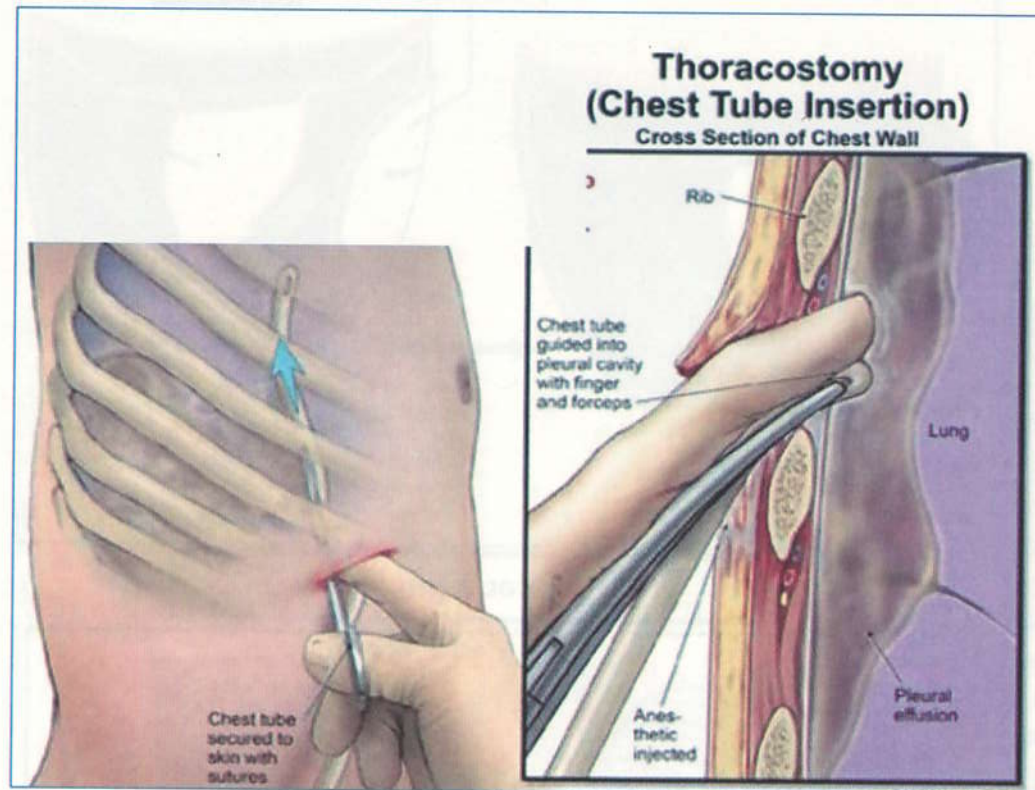
PARADOXICAL MOVEMENT

The flail portion of the chest is

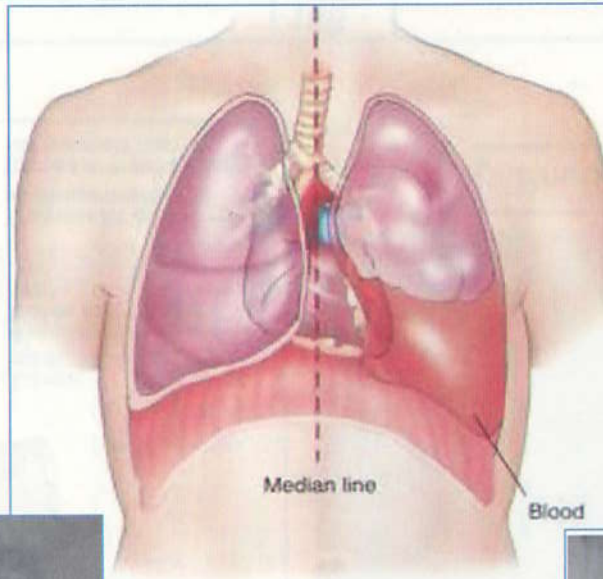
- sucked in with inspiration, instead of expanding outward
- Ballooned out with expiration instead of collapsing inward
- Hypoventilation and hypoxemia



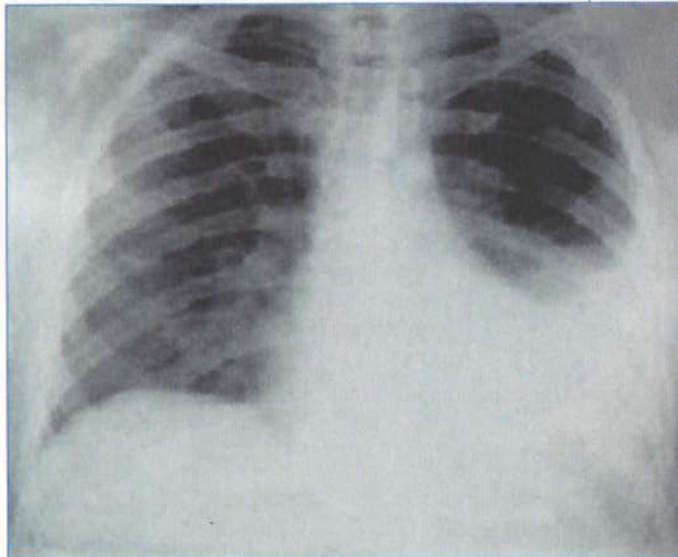
Flail chest



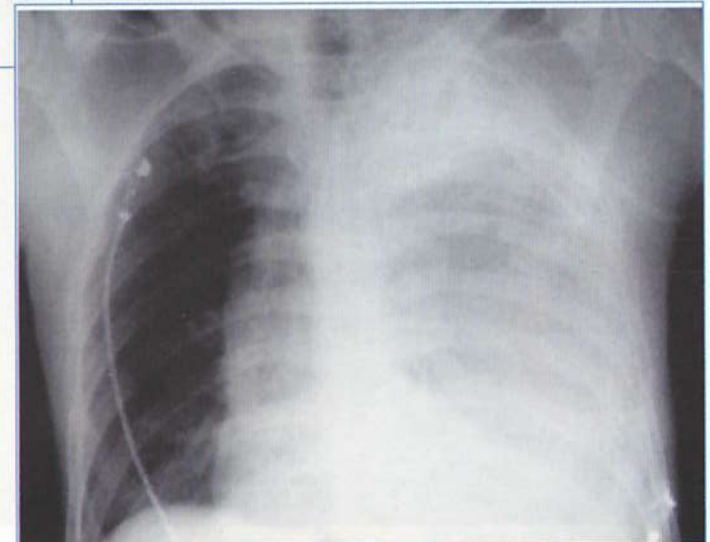
Treatment of flail chest



Hemothorax

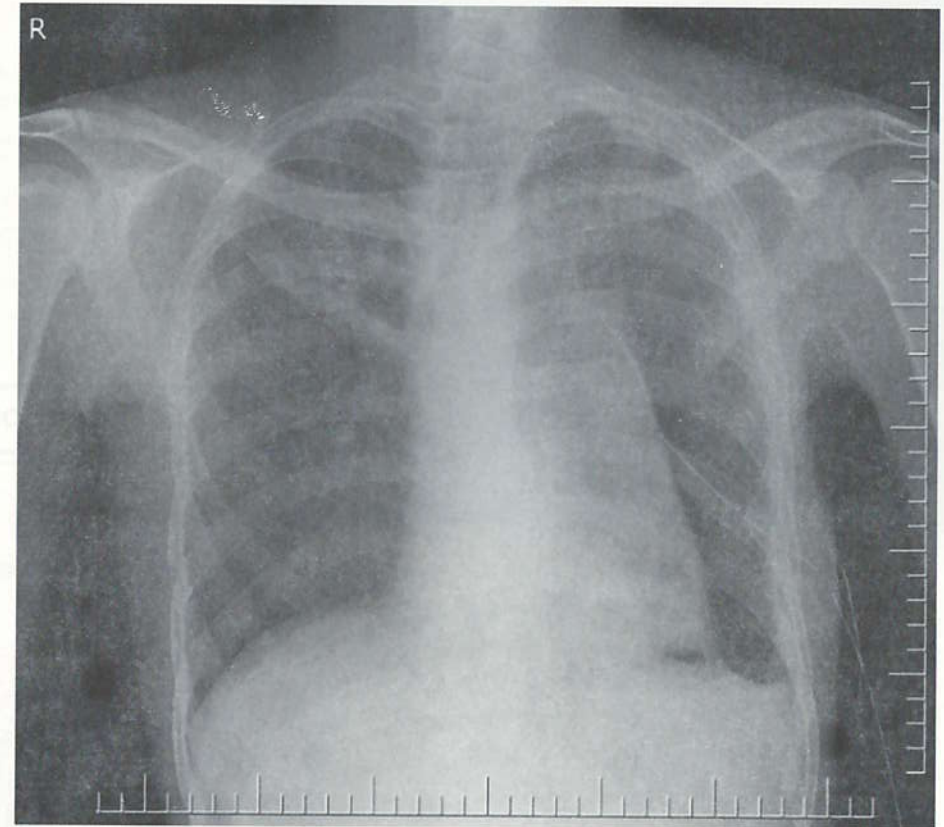
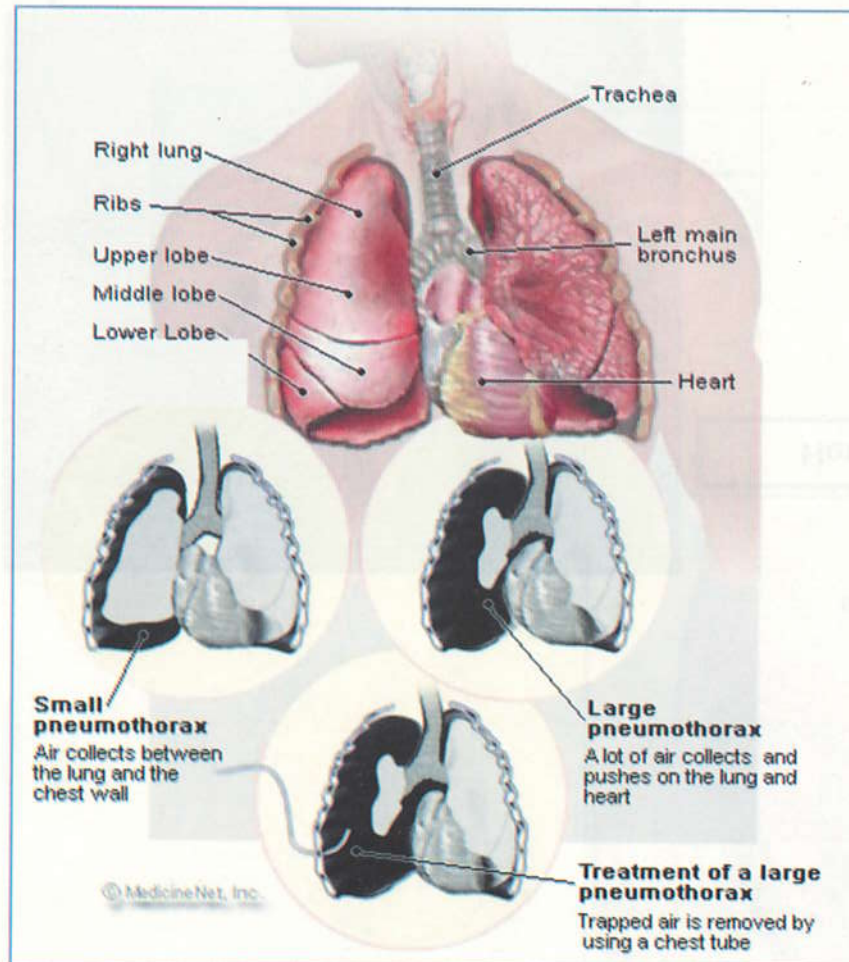


Left side moderate hemothorax

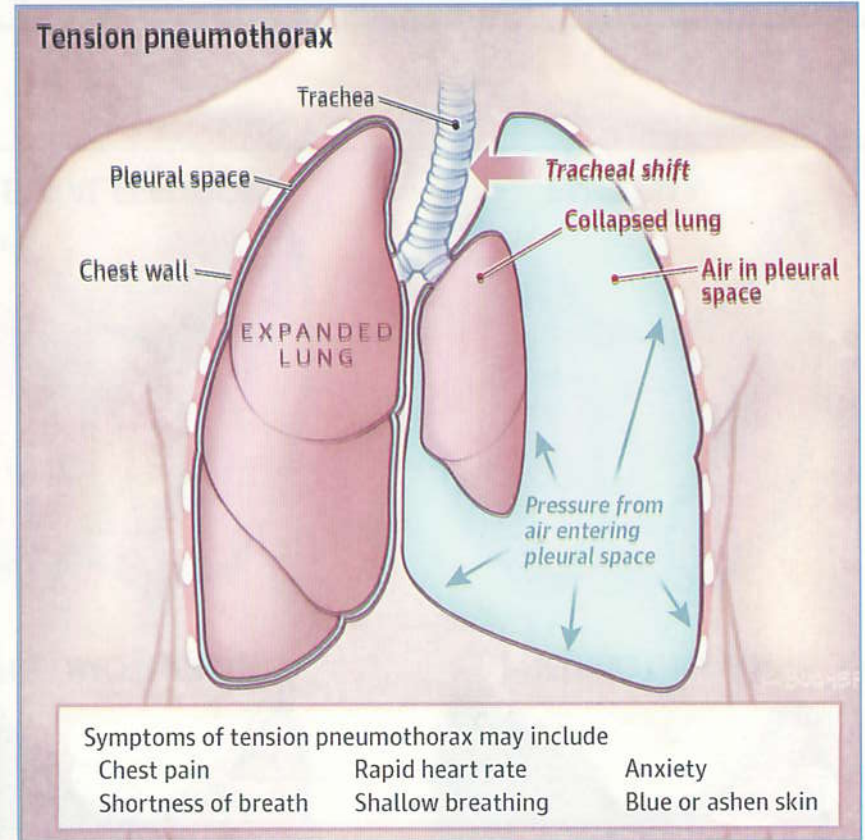
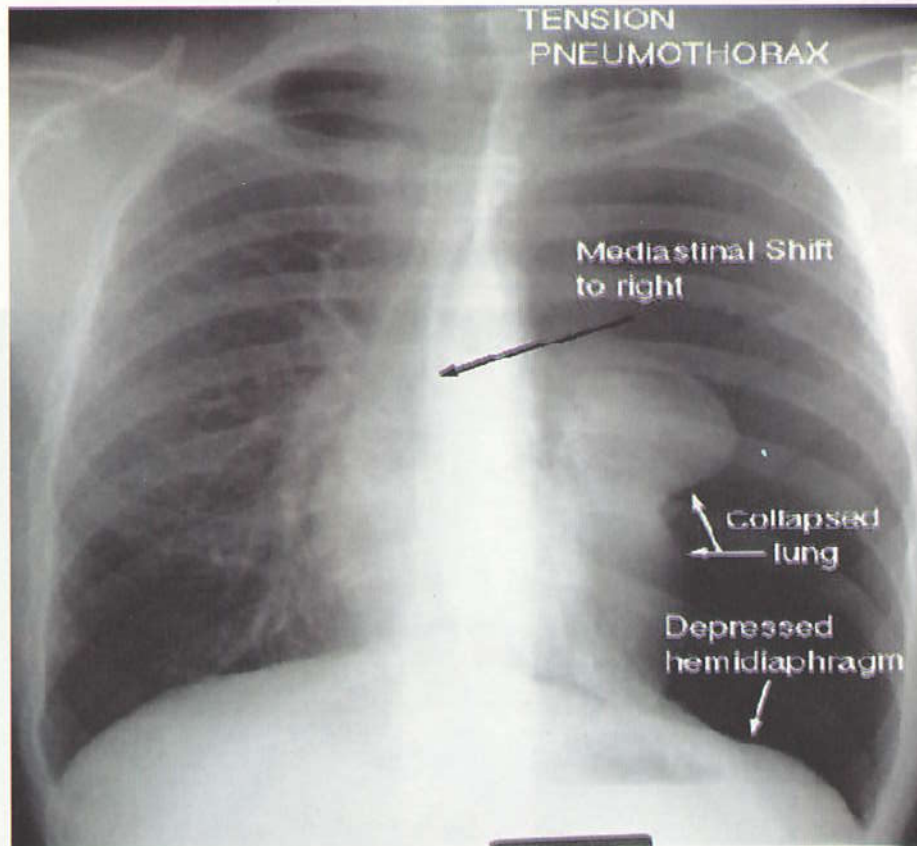


Left side hemothorax after blunt trauma

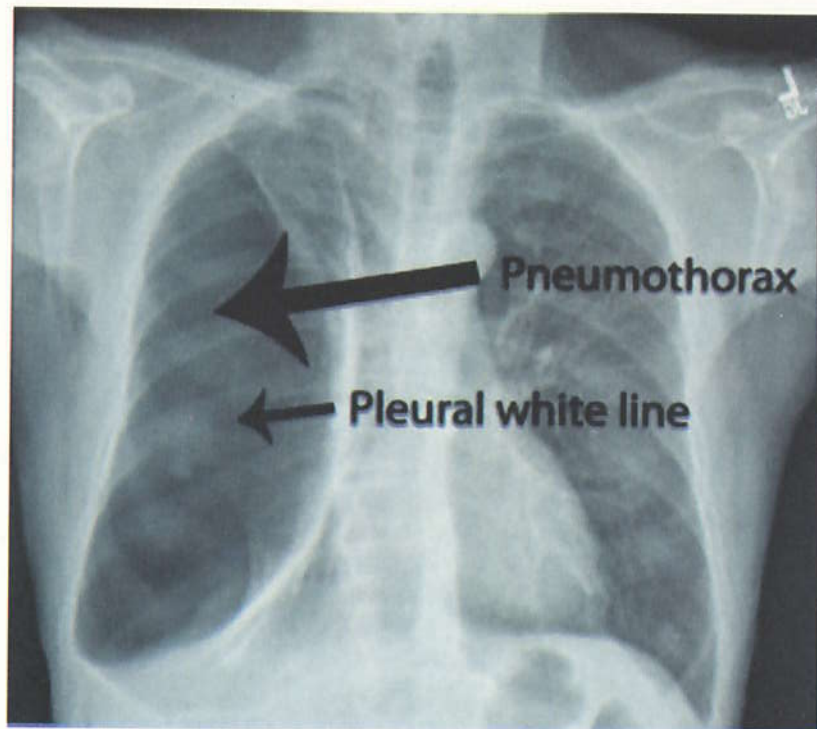
Pneumothorax



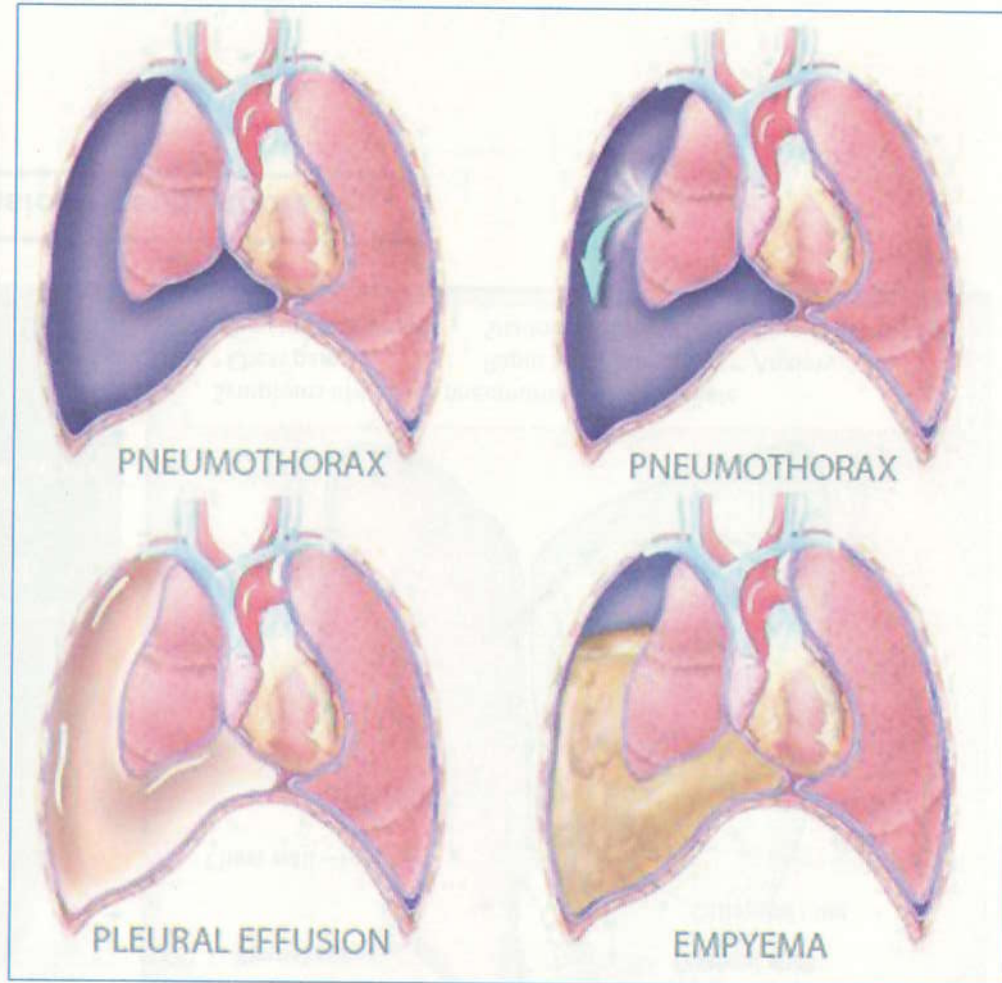
Pneumothorax with chest tube

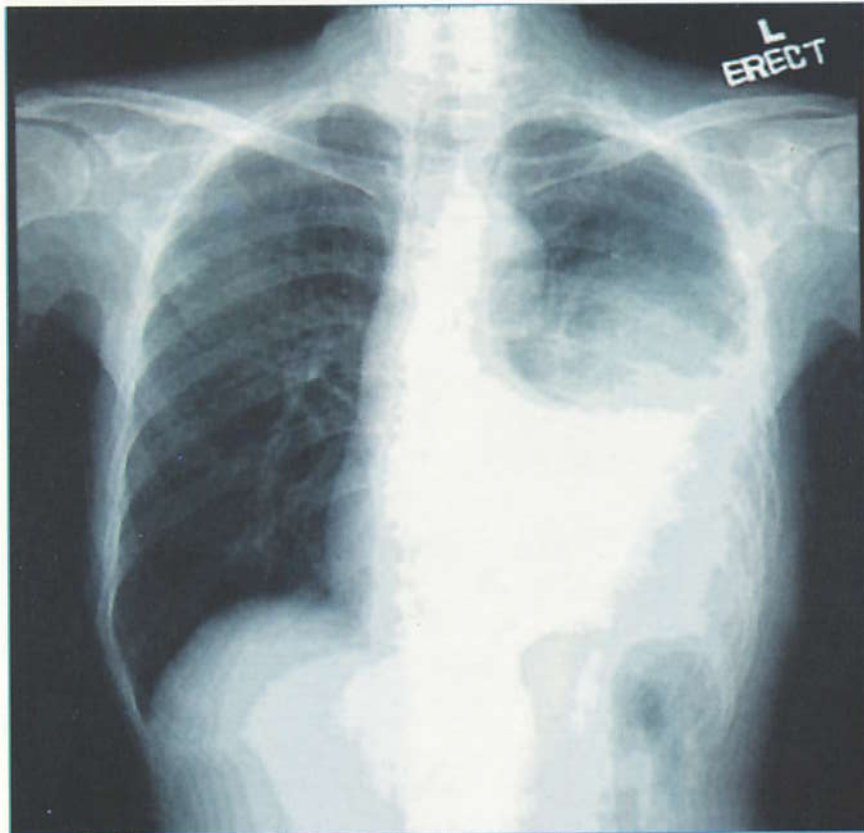


Tension Pneumothorax

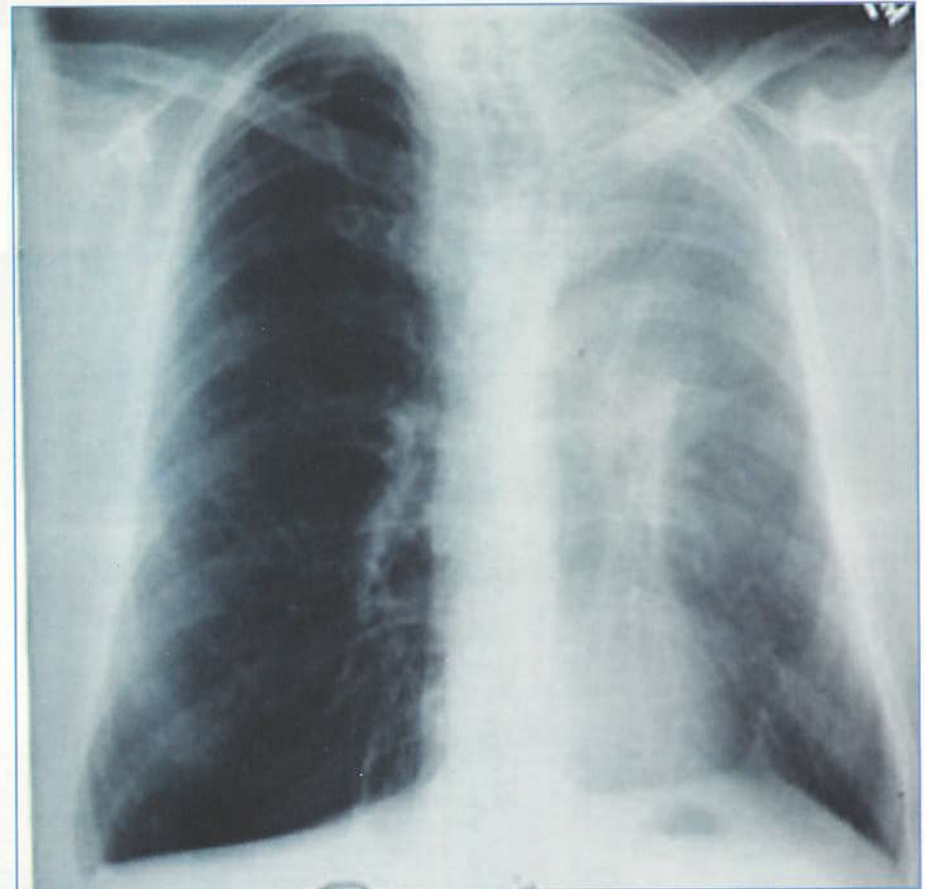


Pneumothorax with chest tube

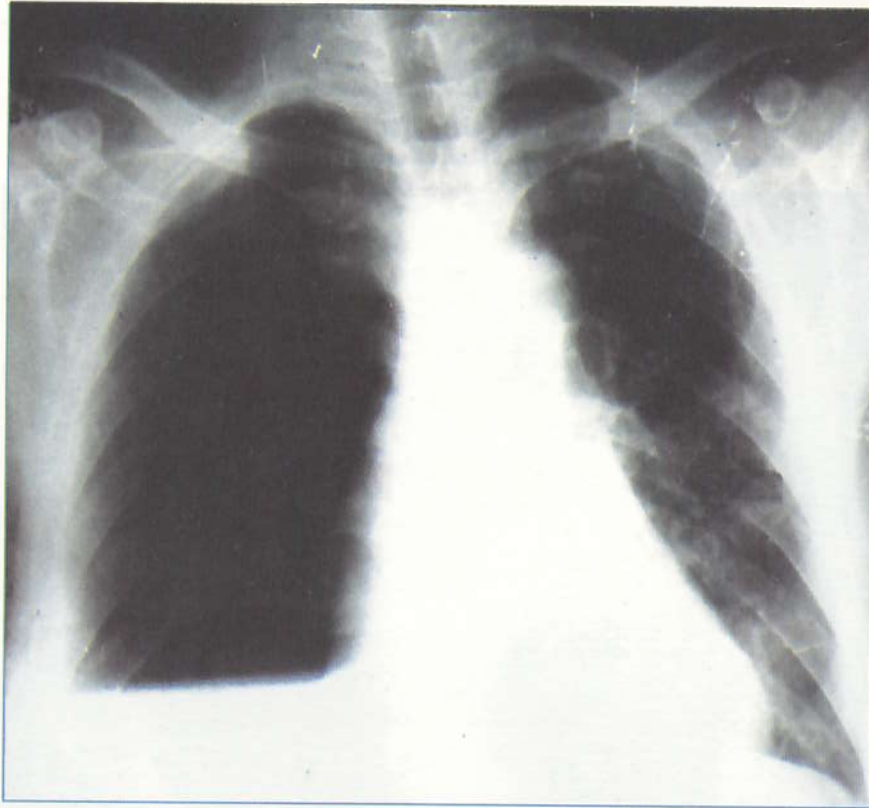




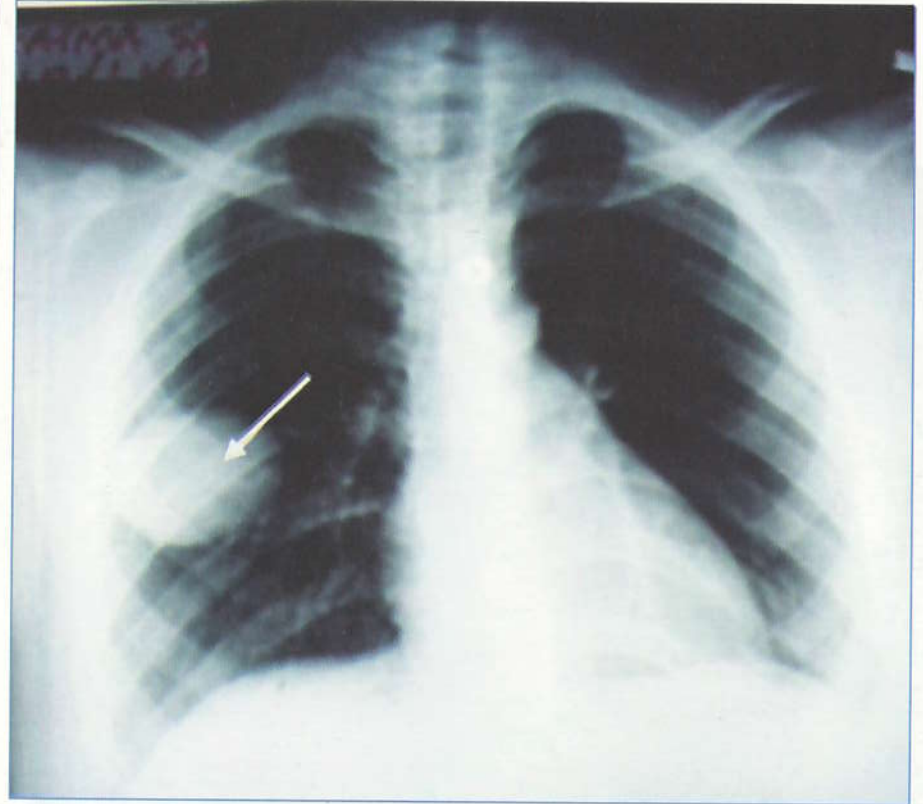
Chest X-ray empyema thoracis



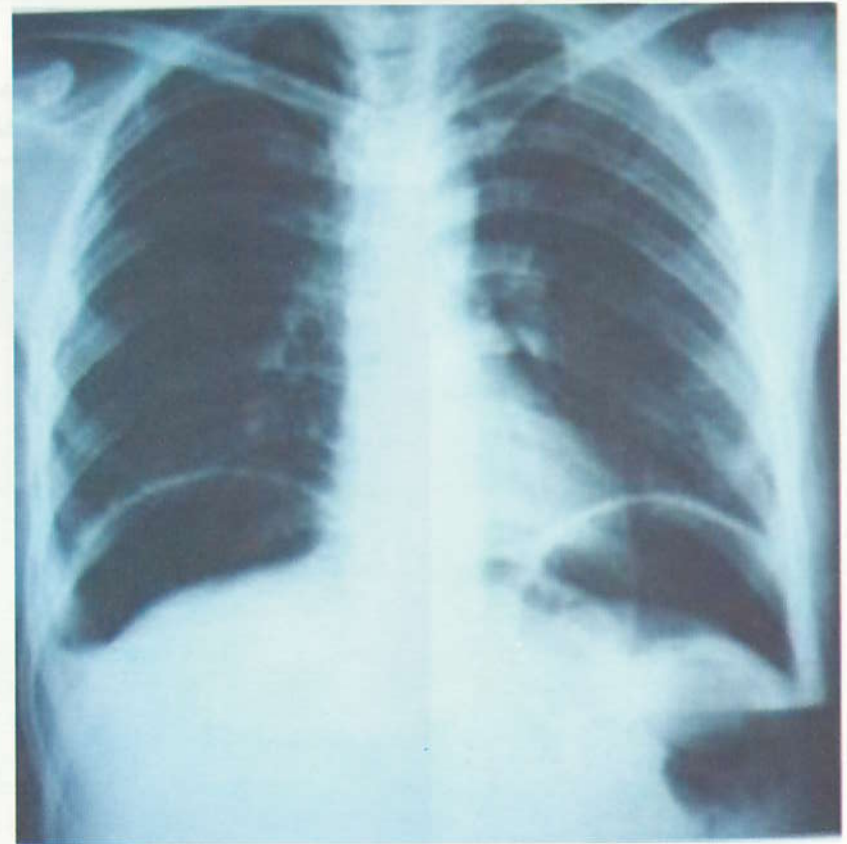
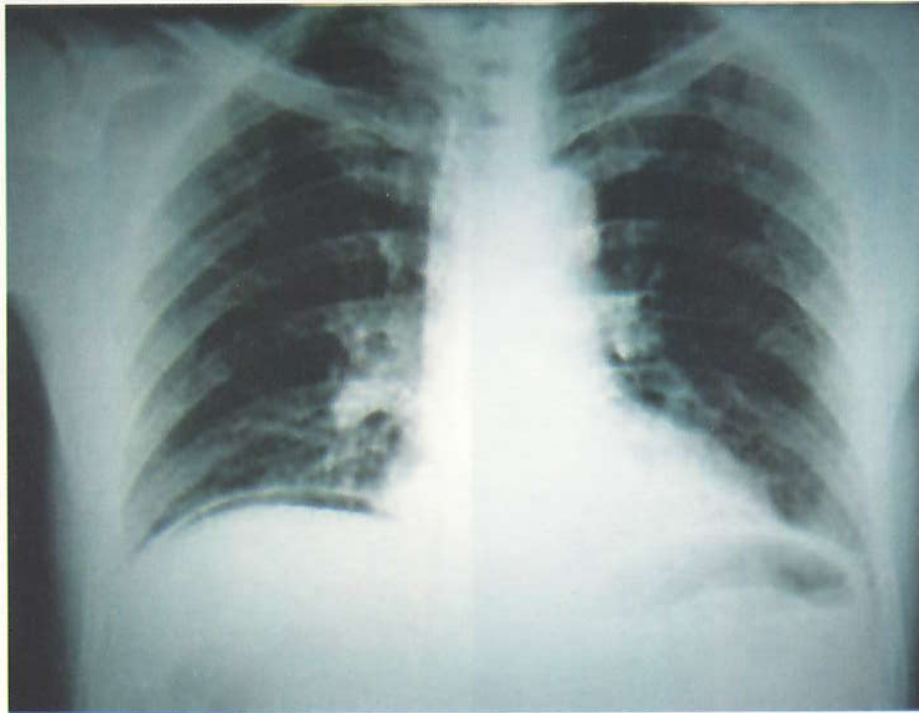
Chest X-ray PA view showing



Hemopneumothorax



Coin shadow for DD



Subphrenic air for perforated viscus



Congenital diaphragmatic hernia

Other

BOOKS

By the author

CLINICAL SURGERY

SURGICAL OPERATIONS

SURGICAL INSTRUMENTS

SURGICAL RADIOLOGY

SURGICAL ANATOMY

SUMMARY

SURGICAL JARS

DIFFERENTIAL DIAGNOSIS

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TRUE OR FALSE

GASTROINTESTINAL SURGERY



 MATARY